SMITHSONIAN MISCELLANEOUS COLLECTIONS
VOLUME 152, NO. 3

SECOND SUPPLEMENT TO THE ANNOTATED, SUBJECT-HEADING BIBLIOGRAPHY OF TERMITES 1961–1965

By
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SMITHSONIAN INSTITUTION

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INTRODUCTION

On December 29, 1961, a Supplement 1955-1960 to an "Annotated Subject-Heading Bibliography of Termites 1350 B.C. to A.D. 1954," by Thomas E. Snyder was published as Publication 4463, Smithsonian Miscellaneous Collections, vol. 143, No. 3. The present (second) supplement covers publications from 1961 through 1965; some 1966, as well as some earlier, overlooked papers are included. A total of 1135 references are listed under authors and titles, and 2381 references are listed under subject headings, the greater number being due to cross references to publications covering more than one subject. New subject headings are: Attractants, Communication, Glossary, International Cooperation, and Resistant Plants; some previous ones are not included in this supplement.

ACKNOWLEDGMENTS

The publication of this bibliography was made possible by a grant from the National Science Foundation, Washington, D.C.

Editors of the Smithsonian Institution have been very helpful in the preparation of the manuscript and index.

Mrs. Lucile W. Yates, cataloger of the Entomology Research Division, Agricultural Research Service, U. S. Department of Agriculture, has supplied some references. Miss Emily Bennett (1960 to early 1963), Mr. Armitt J. Spohn (1963 to late October 1965), and Mrs. Gloria Mauney (from October 1965 to date), librarians of the Department of Entomology, Smithsonian Institution, have been especially helpful in checking references and obtaining obscure publications, often difficult to locate.

LIST OF SUBJECT HEADINGS

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Respiration. *See* Gaseous environment.
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Sex organs. *See* Genitalia.
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Tax status of loss. *See* Damage.
Taxonomy.
Temperature.
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Toxicology.
Uses in industry, arts, and religion.
Wood preservation, poisons for fabrics and fiberboards, insulation, etc.
Zoogeographical regions.

SUBJECT HEADINGS

(For complete citations *see* List of Authors and Titles beginning on page 107.)

ATTRACTANTS

ALLEN, T. C., SMYTHE, R. V., and COPPEL, H. C., 1964, pp. 1009-1011. (Studies in the United States and in several foreign countries involving termite attractancy tests, similar to those made in the United States in 1961, showed that aqueous extracts from wood invaded by the fungus *Lenzites trabea* gave similar results, 21 termite species in 14 genera, including 3 dampwood, 8 drywood and 10 subterranean termites were tested. The termites were listed, methods of test given. Every species which was significantly attracted except one was subterranean in habit; no dampwood termites were attracted and no drywood species responded strongly. Tests will be continued.)

BECKER, G., 1964a, pp. 168-172. (Effect on termites of attractive compounds (aldehydes and acids) formed in wood attacked by Basidiomycetes.)

ESENTHER, G. R., ALLEN, T. C., CASIDA, J. E., and SHENEFELT, R. D., 1961, p. 50. (U.S. subterranean termites follow concentration gradient of attractive material, culture of brown rot fungus on pine, to find decaying wood. Such a potent termite attractant may be useful in termite surveys and control.)

ESENTHER, G. R., and COPPEL, H. C., 1964, pp. 34, 36, 38, 42, 44, 46. (Madison, Wisconsin, experiments continued in the laboratory with the response of *Reticulitermes flavipes* to attractants from extractive and synthetics, especially to extracts from white pine infected with the brown rot fungus *Lenzites trabea*. Periodically for as long as several weeks the termites would not be attracted to any attractant, the cause remains unexplained. Receptors appear to be terminal antennal segments and hind tarsi. The reproductive caste gave the most positive response. Specific differences are being studied between termite species and specific wood-decaying fungi. Field studies indicate that sterilized *L. trabea*-infected wood is the best field attractant. A modified attractant-insecticide unit was used. A sandwich of five corrugated fiberboard pieces in which the center and two outermost pieces were not treated with insecticide. The second and fourth pieces were dipped in either 1% chlordane or dieldrin solutions, or a massive dose of dieldrin was also applied to a sandwich unit by shaking only the central piece in a plastic bag that contained 75% wettable powder. The last method caused the greatest mortality. Decayed wood contains both an orientating and feeding stimulus, synthetics show poorer results in field tests because they may be orientative attractants only.)

JACOBSON, M., 1965, pp. 32, 38. (U.S., *Reticulitermes arenincola* and *R. flavipes*, following flight, females attract males by odor. When male touches female, she lowers her abdomen and is followed in tandem. Males also follow severed tip of female abdomen, or other males if once attracted by female. The odor is detected by males' antennae.)

GREEN, N., BEROZA, M., and HALL, S. A., 1960, pp. 129-179. (U.S., recent developments in chemical attractants for insects.)

SMYTHE, R. V., ALLEN, T. C., and COPPELL, H. C., 1965, pp. 420-423. (U.S., effect of various factors on response of *Reticulitermes flavipes* to pentane extracts of *Lenzites trabea*—invaded wood measured. Degree response for single termites lower than unit of five; unit of five responded less positively than unit of ten. The most positive response was by secondary reproductives followed in order by workers and soldiers. Increased temperature caused a more rapid and positive response. Level of response decreased under the influence of shorter wavelengths and higher intensities of light.)

VERRON, H., 1963, pp. 167-335. (France, *Calotermes flavicollis* reaction stimuli of various castes, interindividual relations

show same characters as behavior linked with trophallaxy, interaction partly of an alimentary nature. Recognition on olfactive basis possible, attractive scent of metabolic origin. During post-embryonic ontogenesis, sexual differentiation increases as reactivity decreases. If the two phenomena are in any way related, their concomitance would tend to show that the insect is less and less submitted to the effects of sexual inhibition pertaining to the reproducers, owing to a progressive decrease in the frequency of alimentary exchanges. The females are licked by the nymphs; the male-sexed individuals are not. The activity of the reproducers causes them to act as "inciters." The neoteinics are little attractive yet react strongly. The deep modifications observed during the swarming period that are particularly concerned with social interattraction and sex-related behavior are to be added to inversion of the tropisms and sexual maturity. These modifications enable the insect now liberated of its social environment, to engage in a new phylogenetical cycle and to multiply.)

VERRON, H., and BARBIER, M., 1962, pp. 4089-4091. (An attractant fraction hexene-301-1 has been isolated from nymphs of *Calotermes flavicollis,* as well as from the crushed galleries of the African termite *Microcerotermes edentatus.* The compound when synthesized is an attractant under experimental conditions. The compounds from the two sources have a totally different odor.)

WATANABE, T., and CASIDA, J. E., 1963, pp. 300-307. (U.S., at least six materials attractive to *Reticulitermes flavipes* found in wood partially decayed by *Lenzites trabea.* These unidentified attractants were steam-volatile, neutral unsaturated compounds. Steam-volatile attractants were also present in the fungus grown on synthetic media, in the wood alone, and in the termites. Testing of compounds of known structure for attractants indicated that some materials with the propenyl and styryl radical were active, for example cinnamyl alcohol and isosafrole. Other attractive compounds were six ionones and certain camphor analogs. The attractivity of camphor may be due to a minor impurity. Considerable specificity should occur in the response of different species of termites. The potential of these attractants in control is undetermined.)

BACTERIA

DAS, S. R., MAHESHWARI, K. L., NIGAM, S. S., SHUKLA, R. K., and TANDON, R. N., 1962, pp. 163-165. (India, *Odontotermes obesus,* bacteria in fungus garden anaerobic sulfate reducing; in guts workers a few sulfate reducing bacteria, but in guts soldiers and nymphs a few bacteria, but not sulfate reducing.)

LUND, A. E., 1962, pp. 30-34, 36, 60-61. (U.S., *Serratia* kills termites in laboratory, carried by mites.)

1965, pp. 22, 24. (U.S., spore-forming bacteria, *Serratia marcescens,* that can be carried by termites back to their colony, gave 100% mortality to laboratory termite cultures within 24 hours, only a few strains are effective. The bacteria produces red pigmented growths and is called red agent. It has been field tested in South Carolina by soil spraying a solution of spores, and the termite activity was reduced. The impregnation of wooden planks with a spore solution led to the discontinuation of termite attack. The longevity of *S. marcescens* was at least 8 months and it has the ability of spreading. It is a potential means of termite control, but after a certain length of time virulence decreases. The influences of pH and moisture must be examined. Protective respirators or aspirators will be required during application to prevent infection by human beings.)

MISRA, J. N., 1962, p. 153. (Intestinal cellulose digesting symbionts in higher termites microbial flora, enzymes bacteria in hindgut *Odontotermes obesus,* other enzyme systems present.)

SEBALD, M., and PREVOT, A. R., 1962, pp. 199-214. (A new species of strict anaerobic bacterium *Micromonospora acetoformici* isolated from the posterior intestine of *Reticulitermes lucifugus* var. *santonnensis.*)

SMYTHE, R. V., and COPPEL, H. C., 1965, pp. 423-426. (U.S., Wisconsin, an experimental soluble toxin preparation derived

from *Bacillus thuringiensis* is toxic to three species of *Reticulitermes* and *Zootermopsis angusticollis;* 75% mortality after 9 days, in combination with spores and inclusion bodies results in greater than 90% mortality.)

BEHAVIOR

DELIGNE, J., 1965, pp. 179-186. (Africa, different types fighting behavior considered as four different evolutionary grades soldier mandibles acquired poly-phyletically.)

HOCKING, B., 1963, pp. 280-285. (East Africa, technique developed for studying the behavior of worker termites toward others of the same species, and in relation to their distribution in space is described and illustrated.)

HOWSE, P. E., 1965b, pp. 335-345. (*Zootermopsis angusticollis* oscillatory movements, "longitudinal" response to low-intensity stimulus to antennal sensilla. "Complex" took place after large disturbance; associated with laying down of odor trail, occurs only on contact with an individual of same species, means of exciting other termites to follow odor trail, but not a specific stimulus.)

HUTCHINS, R. E., 1966, pp. 1-324. (East Africa, queen lays 43,000 eggs per day.)

LINDAUER, M., 1965, pp. 123-186. (Behavior and mutual communication.)

MACHADO, A. DEB., 1963, pp. 1-3. (The ecological concept of species and its premature application to the systematics of *Apicotermes.*)

MCMAHAN, E. A., 1961, p. 2414. (*Cryptotermes brevis,* laboratory studies colony development and behavior.)

PASTEELS, J. M., 1965, pp. 191-205. (Africa, *Nasutitermes lujae* workers different stages; ethological and physiological differences exist between first-stage workers and the other; third-stage workers oldest, venture more readily outside nest.)

SANDS, W. A., 1961a, pp. 277-288. (West Africa, foraging behavior and feeding habits five species *Trinervitermes,* two groups, those which store grass fragments in mounds, and those which do not; list of grasses used in experiment.)

SUDD, J., 1965, pp. 489-496. (Behavior termites in building nest cooperative.)

BIBLIOGRAPHY

ANONYMOUS. 1961, pp. 1-9. (Italy, control, damage, list of publications 1952-1960.)

COMMONWEALTH BUREAU SOIL SCI., 1960, pp. 352, 3. (Bibliography (annotated) 1959-1957, effect termites on soil, tropics.)

1964, 797., pp. 1-8. (Bibliography (annotated) 1964-1933, termites and soil formation, tropics.)

HARRIS, W. V., 1965, pp. 40-43 (Bibliography, world.)

PEMBERTON, C. E., 1964, pp. 689-729. (Hawaii, review of entomology in Hawaii; early references to Hawaiian insects; important immigrant insect pests; biological control; control measures for each pest; bibliography; Isoptera, p. 696 and 710.)

SMITH, R. F., 1965, pp. 235-258. (U.S., bibliography of E. O. Essig, 1909 to 1958.)

RUSSO, G., 1963a, pp. 217-222. (List of publications of F. Silvestri on termites and termitophiles, 51 papers, 1901-1949.)

SNYDER, T. E., 1961, pp. 1-137. (Supplement to annotated, subject-heading bibliography of termites, 1955-1960.)

BIOGRAPHY

ANONYMOUS, 1964d, pp. 23-24. (Dr. A. E. Emerson, professor emeritus of zoology, a foremost authority on termites, donated his collection of termites to the American Museum of Natural History. There are 1800 living and fossil termites identified in the world, Dr. Emerson has obtained 1600. The smallest is 3 mm. long, the largest—a queen—4 inches by 1¼ inches. It relates how Emerson became interested in termites and his association with Dr. W. Beebe at the New York Zoological Society Tropical Research Center in British Guiana. Dr. Emerson discussed the biology of termites, the caste system, division of labor, mound nests 30 feet high, queens that lay 8,000 eggs per day, etc. The vast majority of termites are sterile. The whole question of teleology and purposiveness is reflected in termites.)

NELSON, J. A., 1966, p. 50. (Dr. W. V. Harris, isopterist. British Museum, London, in interview stated that while no live termites occur in England, half of all known species are preserved in the Commonwealth Institute of Entomology collection at the museum. A world authority on classification of termites, Dr. Harris also recommends control measures for the Commonwealth, heading the Termite Research Unit. Much attention focuses on termites which destroy crops.)

BIOLOGY, ECOLOGY

ARORA, G. L., 1962, pp. 111-113. (India, Hoshiarpur, Punjab, *Heterotermes indicola, Coptotermes heimi* and *Microtermes anandi* subterranean termites, galleries of nests differ, number soldiers proportionately small 20%, 31.5%, and 31.5% respectively. *Heterotermes* and *Coptotermes* voracious wood eaters. *Coptotermes* swarms after first heavy showers in late June, early July at sunset, three to four swarms, second largest, *Microtermes* the second week in July, *Heterotermes* the middle of August when it is actually raining. Females of both *C. heimi* and *M. anandi* raise abdomens and emit sweet odor, attract males in courtship.)

BECKER, G., 1961a, pp. 78-94. (Observations and experiments upon the beginnings of colony development of Mexican *Nasutitermes ephratae,* life history in laboratory. Egg laying began 3-4 days after swarming, 1 to 3 daily up to total of 25-30, then a pause. Incubation averaged 6-11 weeks. Half eggs laid eaten by adults, larvae also gradually eaten and adults died. Survival only by addition number older workers and soldiers, with increasing oviposition by young queens.)

1962, p. 232. (Idem.)

1963a, pp. 455-456. (Experiments in laboratory with tropical termites show magnetotaxis or reaction to the points of the compass. Winged adult pairs of *Macrotermes* and *Odontotermes* always assume an east-west resting position. In nature, large queens of *Odontotermes* in India rest in a north-south direction.)

1964, pp. 75-88. (Dealated imagos, particularly *Macrotermes* and *Odontotermes* adjust their resting position to the magnetic field of the earth or to artificial magnetic fields. Correlation between intensity of respiration and atmospherics, higher with minimum atmospherics.)

BESS, H. A., 1963, p. 204. (Ruiru, Kenya, East Africa, *Odontotermes badius?* large queens from underground termitaria, 2.5 to 4 inches in length and three-eighths to 0.75 inches in diameter. This is a nonmound building termite abundant in the Kiambu-Ruiru area at 5000 to 6000 feet.)

1964, p. 351. (Honolulu, Hawaii, *Coptotermes formosanus* queen of subterranean termite found on Dec. 2, 1963, in carton nest; nest of about two cubic feet of material was in false bottom of closet directly on the concrete slab near a bathroom. No tunneling leading to ground. Hundreds of soldiers, small nymphs, and many thousands of workers present, but no eggs.)

BODOT, P., 1962, pp. 789-790. (Africa, southern Ivory Coast, savannahs, seasonal cycle termites.)

BORROR, D. J., and DELONG, D. M., 1964, pp. 56, 62, 65, 118-124, Chap. 10, Order Isoptera, p. 489, 657, 665, 720-721. (U.S., key to Order Isoptera, castes, keys to genera, families, habits, termitophiles, damage, as scavengers, rearing methods.)

BOUILLON, A. (Ed.), 1964, pp. 1-414. (Africa, systematics, physiology, population, and ecology, 11 papers, 3 genera singled out—*Cubitermes, Macrotermes,* and *Apicotermes,* nests of latter described in detail.)

BUCHLI, H., 1961, pp. 628-632. (*Reticulitermes lucifugus,* relations between the maternal colony and the young winged imagos.)

CALS-USCIATI, J., and FRESCHEVILLE, J. DE, 1963, p. 54. (France, Paris, perennation of a colony of *Reticulitermes lucifugus.*)

CHATTERJEE, P. N., and SEN-SARMA, P. K., 1962, pp. 139-142. (India, *Odontotermes obesus,* seasonal incidence of wood destroying subterranean termites tested with wood from *Salmalia malabarica.*)

CHEN, NING-SEN, 1959, pp. 1-17. (China, *Coptotermes formosanus, Reticulitermes chinensis,* and *R. flaviceps,* list of 16 genera.)

CHHOTANI, O. B., 1962a, pp. 73-75. (India, *Kalotermes beesoni,* all alates emerging from colony in laboratory were females, as were those infesting banyan trees in the field, showing reproduction by

parthenogenesis to be regular and normal.)

CHIN, CHUN-TEH, and MA, SHIH-CHUN, 1959, p. 240. (China, *Odontotermes formosanus, Coptotermes formosanus* soil insects.)

CLOUDSLEY-THOMPSON, J. L., 1964, pp. 1-11. (Africa, Sudan, Khartoum Prov., desert, *Subulitermes* sp., *Macrotermes bellicosus, Trinervitermes geminatus.*)

COLLINS, M. S., and RICHARDS, A. G., 1963, pp. 600-604. (U.S. studies on water relations eastern species *Reticulitermes: R. tibialis* is rather desiccation-tolerant and loses water at a consistently low rate, three species that lose water relatively slowly but show great variability under experimental conditions, *R. flavipes* shows a variable but relatively high rate of water loss. The desiccation tolerance of *tibialis* due to relatively effective waterproofing mechanism, a well-developed cement layer, and moderate-size *flavipes* seems to have least efficient transpiration-retarding mechanism, large size permits it to outlive species having lower loss rates during drying possibility. Transpiration resistance increases with age, as does resistance of waterproofing to damage, the rate of transpiration in imagoes falling to about one-third the rate of teneral individuals. Size appears to have no influence on rate of loss though it can influence length of survival under dry conditions. When treated to demonstrate the cement layer, species of *Reticulitermes* other than *tibialis* were found to have very small argentaffin granules in depressed areas, instead of the heavy scaly layer found in *tibialis.*)

COUPIN, H., 1905, pp. 8-10. (General, nests, and as food.)

DAVENPORT, D., 1966, p. 8. (U.S., futile? termite tubing, Ashland, Nebraska, down from floor joists 37 inches for moisture, still 5 feet from soil in basement, no heat, soil dry, house 24 years old, no serious damage.)

DELIGNE, J., 1962, pp. 7-21. (*Bellicositermes natalensis* by two successive moultings the minor worker develops into a major soldier. Its mandibles and head exhibit important allometric growths. The labrum, maxillae, the hypopharynx, and the prementum are reduced and lose cuticular formations which probably have mechanical and sensorial functions. Problems raised by these transformations are mentioned.)

DELIGNE, J., and PASTEELS, J. M., 1963a, pp. 462-472. (Biology.)

DRIFT, J. W. P. T., VAN DER, 1962, pp. 24-28. (Europe, *Kalotermes flavicollis, Reticulitermes lucifugus* habits, damage, control.)

DURANT, J. A., and FOX, R. C., 1960, pp. 202-207. (U.S., South Carolina, Piedmont region *Reticulitermes* spp. in soil and litter of pine and hardwood stands May-September 1962 pine: loblolly and shortleaf; hardwood: oak, beech, yellow poplar. Of all the arthropods, termites were 0.64, 0.07, and 0.00 in relative abundance in the pine stands, and 0.60, 0.82, and 0.22 in the hardwood stands. Soil moisture was an influence, and it was lower in the pine stands.)

ESENTHER, G. R., 1961, pp. 945-946. (U.S., Wisconsin, *Reticulitermes flavipes* and related experiments with other species.)

FARB, P., and the EDITORS OF LIFE, 1962, pp. 82-86. (General, summary of the life of termites.)

FOX, R. M., and FOX, J. W., 1964, pp. 5, 19, 20, 338, 350-354, 357. (Damage, scavengers in forest, as food for humans, classification, biology, general, in Africa and Australia termite mounds are characteristic of the landscape in vast areas. These hills may be up to 40 feet high. A *Macrotermes* queen in Liberia weighed 35.5 grams, capable of laying 34,000 eggs a day. More than 500 species of other invertebrates share their nests as termitophiles.)

GÖSSWALD, K., 1961, pp. 146-151. (Comparison societies termites and man, termites more social, not independent, colony an entity or single biological unit. Basis for man's society is the family. Each family is an independent biological unit. Each single individual is biologically self-sufficient.)

GRASSÉ, P. P., and NOIROT, C., 1960, pp. 109-123. (France, *Calotermes flavicollis,* formation neoteinics easier and quicker in female, sex differences in female, sex differences in inhibition, numbers; have different role.)

GREAVES, T., 1962, pp. 1-17. (Australia, *Coptotermes acinaciformis,* vibration causes temperature in colony in tree to drop 11° C.; colonies can attack living trees from nearby colonies.)

1962a, p. 65. (Australia, *Porotermes adam-*

soni of the 101 pairs maintained at 60° F. since January 1961, 81 survived the first year but only 8 pairs produced eggs and larvae, only 66 of the 100 pairs survived at 78° F. and only 2 pairs produced larvae.)

1962b, pp. 238-240. (Australia, termites living in forest trees, species, competition, population, effect colonies on temperature trees, reaction to vibration.)

GRIFFIN, F. J., 1961, pp. 1524-1526. (General.)

HARRIS, W. V., 1961, pp. 1-187. (Tropical Africa, mounds of *Macrotermes* in East Africa 30 feet high; queens 5 inches in length; flight, colony foundation, nests.)

1962b, p. 99. (In termites there is a dual nature to biology, involving both the individual and the colony; there are differences in food, shelter, and reproduction according to the family.)

HARRIS, W. V., and SANDS, W. A., 1965, pp. 113-131. (Social organization of termite colonies, summary recent research on all phases of termite biology under diverse world conditions. Extensive list of pertinent references included.)

HEATON, S. S., 1966, pp. 28a, 28b, 29-30. (U.S., California, life of *Zootermopsis angusticollis* illustrated, egg to adult, castes, anatomy, protozoa photographed.)

HOCKING, B., 1965, pp. 83-87. (East and South Africa, mass exodus of all stages workers and soldiers *Macrotermes bellicosus* from nest described. Observations on alarm reactions and on weights and load weights of foraging individuals of *Hodotermes mossambicus* given. Some peculiar nest structures are illustrated.)

HOWSE, P. E., 1964, pp. 90-97. (The nature of the insect colony, entire termite colony considered as a single organism, the superorganism. Dr. A. E. Emerson believes features of the nest can be considered as equally important in classification. Emerson also believes in this conception: it is possible to appreciate evolutionary trends more clearly such as increased social homeostasis. An example M. Lüscher has shown that an "air-conditioning" system is present in the mounds of the African *Macrotermes natalensis,* whereby hot air arises from the center of the nest and is cooled in large canals near the surface. The air is in constant circulation and some gas exchange takes place near the surface of the mound; an effective "respiratory system.")

HRDÝ, I., (Ed.), 1960, pp. 1-406. (Czechoslovakia, ontogeny of insects.)

HUTCHINS, R. E., 1966, pp. 1-324. (Habits, number species, nests, protozoa, sounds.)

JEANNEL, R. G., 1960, pp. 92, 93, 212-226, 274. (General, social life, nests, fossils, 500 termitophiles known, enemies.)

JOSEPH, K. J., 1964, pp. 54-55. (India, supplementary reproductives (neoteinics) from a colony of *Microcerotermes fletcheri,* 256 forms collected from nest in Mysore State at Yellapur, males and females, function.)

JUCCI, C., 1957, pp. 109-129. (General, genetics, experimental biology, systematics.)

1960, pp. 107-127. (General, genetics, evolution and systematics. Bacteriocytes *Mastotermes darwiniensis:* symbiosis, inherited in ontogenesis (transmitted from body mother to eggs) and in phylogenesis (from Protoblattoids, since paleozoic). In every other family Isoptera (except Termitidae) symbiosis with intestinal flora and fauna. Specificity symbiosis between Hypermastigina and Hodotermitidae, Calotermitidae and Rhinotermitidae; relation of symbionts with host organism and their transmission. Losing of intestinal fauna and exteriorisation of the symbiosis in Termitidae: cultivation fungus gardens (sometimes gardens without fungi).)

1960a, pp. 1-24. (General, the society among insects.)

KENDEIGH, S. C., 1961, figs. 12-1, 27-7, pp. 109, 164, table 9-8, pp. 174-177, 179, 251, 311-312, 338-339, 344, 347, 349. (Ecology, social life, mutualism, symbiosis, inheritance behavior patterns, woodland biociation, adjustments to desert, nests in savanna, abundance in American tropics, nests in trees, meridian nests.)

KETKAR, S. M., 1962, pp. 115-116. (India, Poona, *Odontotermes redemanni,* swarming occurs twice a year, April to June, September to October, the first period at dusk during the day rain occurred, during the second period the swarming also at dusk was less frequent. Alates attracted to lights for distance 2-3 miles.)

KEVAN, D. K. McE., 1962, pp. 2, 10, 35, 52-55, fig. 76, 79, 89, 90, 92, 98, 99, 133, 135, 140, 141, 177-179, 184, 189 et seq. (General, mostly tropical species.)

KLOTS, A. B., and KLOTS, E. B., 1959, pp. 23-30. (Living insects of the world.)

KRUTCH, J. W., 1963, pp. 22-25. (Comparison society man and that of termites. Anthro-

pologist Ralph Linton states man is an anthropoid ape trying to live like termites and not doing too well at it. Survival alone is termites only success, have become mechanical guided by instinct. Man can reason, has power to choose.)

KURIR, A., 1962, pp. 1-8. (Europe, *Reticulitermes flavipes* manner of living in wood of this subterranean termite illustrated.)

LANHAM, U., 1964, pp. 35, 145, 154-158. (General, description, relations, habits.)

LUND, A. E., 1962, pp. 30-34, 36, 60-61. (U.S., ecology, termite fungi relations, termites able to attack wood uninfected by fungi; some wood-destroying fungi produce end products (metabolites) that are repellent, or toxic, others attractants. Some molds reduce longevity termites. Mites usually scavengers, but are disease vectors of a bacterium *Serratia.* Termites fluoresce when exposed to ultraviolet light, cuticle involved. Temperature lower lethal average—11° C., winged—17.5° C., upper lethal—48.5° C.)

LUPPOVA, A. N., 1963, pp. 17-27. (Central Asia, Transcaspia, corrections on faunal data and information on biology of *Anacanthotermes turkestanicus* and the major Transcaspian termites are given. *Kalotermes flavicollis, Anacanthotermes ahngerianus, Reticulitermes lucifugus, Amitermes vilis, Microcerotermes* sp.)

McMAHAN, E. A., 1961, p. 2414. (Hawaii, *Cryptotermes brevis,* laboratory studies colony development and behavior.)

1962, pp. 145-153. (Hawaii, *Cryptotermes brevis,* laboratory studies in termitaries of birch tongue blades, colony growth slow, no soldiers produced first year, survival of primary reproductives paired for different intervals up to 12 months varied from 50% to 85%. Supplementary reproductives superior to primaries in egg production. Mixed pairs of primary and supplementary reproductives produced young. Primary females differ from supplementary in tendency to suspend egg production following an initial egg laying period.)

MARTINEZ, J. B., 1963, pp. 1-30. (Spain, Peninsula, Balearic, and Canary Isles, habits *Reticulitermes lucifugus,* Peninsula, Balearic Isles; *Cryptotermes brevis,* Canary Islands.)

MATHUR, R. N., and SEN-SARMA, P. K., 1962, pp. 1-18. (India, Dehra Dun, notes on habits and biology termites.)

MILLER, E. M., 1964, pp. 1-36. (General summary biology, with special reference to Florida termites, kinds, behavior, nests, communication, regulation castes, colony as superorganism, control, nutrition, evolution, Data on "swarming" months and resistance to drying of Florida species given.)

NAKAJIMA, S., SHIMIZU, K., and NAKAJIMA, Y., 1964, pp. 222-227. (*Coptotermes formosanus,* studies vitality colonies. Seasonal fluctuations on external characters workers, the ratio of caste-member and carbon dioxide in the nest of a colony.)

FUDALEWICZ-NIEMCZYK, W., 1962, pp. 137-155. (Polymorphism, determination of castes and establishment of new communities, by several methods.)

NOIROT, C., (1960) 1962, pp. 583-585. (General, seasonal cycle of termites, essentially regulated by temperature, in Tropics rain factor in flight.)

(1960) 1962a., pp. 658-659. (Africa, Ivory Coast, the evolution of the termite fauna of the savanna region, the regression of *Bellicositermes natalensis* and the expansion of *Amitermes evuncifer.* Dead nests of former evidence, two species have different action on soil, former more favorable.)

1963, pp. 636-662. (Africa, *Bellicositermes natalensis* description, figure and evolution nest; population, fungus gardens. *Globitermes annamensis* description and figure nest, biology. Polymorphism, castes, alimentation, nutrition. Nest construction, primitive to specialized. *Apicotermes arquieri* nest, description, figure. Social regulation, superorganism.)

NUTTING, W. L., 1965, pp. 113-125. (Arizona, *Zootermopsis laticeps,* habits, distribution flights June to early August, nests in trees, enters through wounds, cockroach and syrphid larvae in nests.)

1965a, pp. 1-5. (U.S., Southwest, and northern Mexico, 28 species three-fourths of total native termites occur, generally no more than 6 economically important, in any area, but 13 for whole region; discusses types; habits of 7 species, including flights, size colonies.)

PICKENS, A. L., 1962, p. 101. (Caste in ants, bees, and termites, abstr.)

PLATEAUX-QUÉNU, C., 1961, pp. 178-185. (Replacement sexuals in the social insects, imaginal in primitive and specialized termites, neoteinic derived from nymphs, from workers, number of neoteinics, importance.)

RITTER, H., 1964, pp. 1459-1460. (Defense of

mate and mating chamber in a wood roach [*Cryptocercus punctulatus*].)

Roonwal, M. L., and Chhotani, O. B., 1963, pp. 975-976. (India, *Odontotermes obesus* royal chamber with four queens and two kings, dealated, queens laying in pairs—one pair lying north-south the other west-southeast, with the heads facing in opposite directions, small mounds, 52-62 mm. in length queens, record of more than one king and queen in colony listed.)

Rozanov, B. C., 1963, pp. 63-67. (Burma, tropical, habits and behavior termites.)

Sands, W. A., 1961a, pp. 277-288. (West Africa, foraging behavior and feeding habits five species *Trinervitermes,* two groups, those which store grass fragments in mounds, and those which do not, list of grasses used in experiment.)

1965a, pp. 117-129. (Nigeria, West Africa, the development and dispersal of alates, and subsequent development new colonies of five species *Trinervitermes* in laboratory cultures show differences between species that can be related to their distribution and environmental requirements.)

Scott, K., 1964, p. 23. (U.S., California, Atwater District, Los Angeles, infestation attic by *Kalotermes* in several places spacing gap bridged by pellets attached to one another by an adhesive forming a ball about the size of an elliptical baseball. Through these masses the termites traveled from timber to timber, through voids, an uncommon occurrence.)

Semedo, C. M. B., 1961, p. 105. (Portugal, *Leucotermes* (*Reticulitermes*) *lucifugus,* morphology adult worker, habits, habitats.)

Sen-Sarma, P. K., 1962, pp. 292-297. (India, Dehra Dun, *Odontotermes assmuthi,* colony foundation in the laboratory in glass jars with semul sawdust with 85% relative humidity and temperature of 28°C. Nesting site selected by females. Eggs laid after 6-9 days of swarming, number of first batch 100-300. Second batch laid on 4th day after hatching first batch, laying thereafter continuous. Incubation period 40-42 days. In hatching parental care of eggs essential. Parthenogenesis not observed.)

Sen-Sarma, P. K., and Chatterjee, P. N., 1965, pp. 9-11. (India, *Heterotermes indicola* founding new colonies in laboratory through substitute reproductives developed from workers after a period of 3 months.)

Shell Chemical Co., 1962, p. 62. (U.S., photograph of a shelter tube 15½ inches from ground to floor joists.)

Shimizu, K., 1962, pp. 105-110. (Japan, *Coptotermes formosanus,* vitality of colonies vary in field, factors: body weight workers; greater the ratio of the younger individuals to workers with 14 antennal segments, the more vigorous the colony; ratio of larvae.)

Simon, H., 1962, pp. 7-119. (Habits, nests, damage, illustrated.)

Smith, M. V., 1963, pp. 7-11. (Complex behavior ants, bees, wasps, and termites, social insects and caste system.)

Smythe, R. V., and Coppel, H. C., 1964, pp. 133-135. (Laboratory studies on relationships *Reticulitermes flavipes* and ants in Wisconsin.)

Snodgrass, R. E., 1961, pp. 425-445. (Termites, pp. 430-432, general, ectohormone as regulatory agent for colony.)

Snyder, T. E., 1963b, pp. 175-179. (U.S., eastern states, *Reticulitermes* spp., manner founding new colonies by supplementary reproductives not known. In spring large numbers are present before the annual colonizing flight or swarm of the winged adults. These disappear just before or at the time of the flight from the colony. Are they killed by the workers as being unnecessary in the parent colony where reproductives are already present? Or, impelled by the same stimuli as the winged, do they migrate—with or without workers—by subterranean galleries to form new colonies?)

1965, pp. 497-506. (Recent research, mostly in the United States, summarized.)

Snyder, T. E., and Francia, F. C., 1962, pp. 63-77. (Philippines, habits, and habitats, emergence dates termites.)

Swan, L. A., 1964, pp. 4, 97, 240. (Population colonies South American termite three million. Queen fungus-feeding tropical termites may live as long as 50 years. Queen some Australian termites lay 360 eggs an hour, or 3 million in course of a year—for 25 to 50 years. Ants important check on termites in tropics. In Madras, myrmicine ants used to protect structural timbers in warehouses. Species of dolichoderine ant occupy 80% of nests of common species of termites in South Queensland, Australia. Termites important scavengers in tropics.

In South Africa termites function like temperate earthworms.)

Tang, C., and Li, S., 1960, pp. 302-306. (*Coptotermes formosanus* and *Reticulitermes flaviceps,* types of reproductive forms in these subterranean termites in Hangchow, China, macropterous, brachypterous, and apterous, latter two polygamous, as many as 50 brachypterous queens in one colony.)

Urquhart, F. A., 1965, pp. 69-72. (Habits, damage, castes, nests, rate egg laying, detection, spread, transportation.)

U.S. Dept. Agriculture, Plant Pest Control Div., 1963n, p. 1416. (Hawaii, *Coptotermes formosanus* subterranean termite queen found Dec. 2 by D. Yara. Carton nest of 2 cubic feet material in false bottom of closet on concrete slab near bathroom, no tunneling to ground. Hundreds of soldiers and small nymphs present, no eggs, thousands of workers. H. B. Bess.)

Uthaisilp, C., 1962, pp. 417-422. (Thailand, life history termites that live in ground, make mounds, queen could produce 6,000-7,000 eggs a day. Colony built by a couple of termite workers after leaving old colony. One becomes queen and reproduces rapidly, mating with a group of nonworking males, other groups remain sterile and become workers and soldiers.)

Weesner, F. M., 1965, pp. 1-71. (U.S., a handbook, all Nearctic termites, classification, structure, behavior, biology, flight dates regionally *Reticulitermes* spp. indoors, introduction, keys for identifications, illustr.)

1966, pp. 19-20, 53-56. (Western U.S., excerpts from 1965 handbook and answers to questions when addressing 13th Ann. Cal. Poly. Pest Control Conference, Pomona, Calif., Dec. 3-4, 1965.)

Wendt, H., 1965, pp. 185-192. (Summary studies of authors, flight not nuptial, rate of egg laying.)

Wigglesworth, V. B., 1964, pp. 71, 86, 87, 100, 117, 120, 135, 156, 239-240, 244, 245, 247, 309, 310. (Symbiont protozoa, p. 71; growth and metamorphosis, pp. 86-87; polymorphism, p. 100; egg-laying capacity, p. 117; termitophiles, p. 120; color, p. 135; defense: mandibular, ejection secretions, p. 150; relation to cockroaches, pp. 239-240; control of castes by pheromones, pp. 244-246; nests, population, p. 247; castes, biology, p. 309; longevity, p. 310.)

Wilkinson, W., 1962, pp. 265-286. (West Africa, Nigeria, *Cryptotermes havilandi,* establishment new colonies, dealates seek hole or crack which is sealed with material from gut, holes between 1.5 and 3 mm. in diameter; rate egg production, incubation period, and duration first three instars recorded. Egg production by physogastric queen could maintain populations in excess of 3000, neoteinics in first year have much greater fecundity than primary queens.)

1963, pp. 269-275. (Port Harcourt, Nigeria, *Cryptotermes havilandi,* causes serious damage to buildings on West Coast tropical Africa. Daily observations of number alates flying, seasonal variation and diurnal pattern flight made over period 13 months. Method colony foundation, rate egg laying, incubation period, progress early instars described. Methods by which infestations are spread discussed.)

BUILDING CODES

Anonymous, 1962h, pp. 16-17. (U.S., Southern Building Code Congress and Building Officials Conference of America have approved Bruce-Terminix $5000 Protection Contract, renewable annually, annual reinspection, necessary free treating and repair all new termite damage to structure or contents up to $500. Such pretreatment an equivalent to metal shields or pressure-treated lumber. More than 1500 cities and towns adhere to these two building codes.)

Sundlol, W. A., 1964, pp. 11-15, 17-18. (U.S., in 1960 building code bodies began to accept fire retardant pressure-treated wood (FRTW) as a safe and desirable material in construction. The annual production has increased from 12,600,000 to 22,120,000 feet board measure. It will not allow fire to spread, it is identified by label, quality controls maintained. Been successfully used for 50 years, beginning in New York. Preferential rates granted for FRTW by insurance companies. Baxco-Pyresote a well-tested product.)

CASTE DETERMINATION

Gay, F. J., 1961, Laboratory studies, p. 38. *In* Commonwealth Sci. and Indus. Res. Org., Div. Ent. 1960-1961 Ann. Rept. (Australia, small-scale laboratory colonies of *Nasutitermes exitiosus* with an initial population of 4 g. are being used in an attempt to develop a bioassay method for use in assessing the activity of "soldier-inhibitor" materials in connection with caste-determination studies.)

Jucci, C., 1963, pp. 73-97. (Caste differentiation effected through the mediation of an endocrine system. The adoption of a system of ectohormones or pheromones could represent a kind of pharmaceutics of endocrine organs, elaborated in the course of evolution of social insects in order to achieve a better regulation of social equilibrium. The ectohormones could, at least in part, derive in metabolism from endohormones. These metabolic products, being excreted by various parts of the organism of royal individuals (and others) would be utilized as social hormones, for the homeostatic regulation of social behavior and organization.)

Lebrun, D., 1964, pp. 4152-4155. (France, *Calotermes flavicollis,* the role of the corpora allata in caste formation.)

Lüscher, M., 1963, pp. 244-250. (Europe, *Kalotermes flavicollis,* function of corpora allata crucial in caste determination, different hormones secreted by different castes. Corpora allata hormones are true differentiation hormones, rather than ecdyson, the hormone of the prothoracic glands.)

1963a, pp. 1-11. (Europe, *Kalotermes flavicollis,* production replacement reproductives regulated by two sex-specific inhibitory pheromones given off by the sexual pair and in part by a stimulating pheromone given off by male reproductives. There are probably three pheromones, endohormones may act directly or in modified form as pheromones.)

Ruppli, E., and Lüscher, M., 1964, pp. 626-632. (Europe, *Kalotermes flavicollis,* the elimination of supernumerary replacement reproductive is initiated by fighting. When one reproductive is injured it is abandoned by its aggressor and becomes a victim of cannibalism by larvae and nymphs.)

Shimizu, K., 1963, pp. 207-213. (Japan, emergence of soldiers and supplementary reproductives of the Japanese termite *Leucotermes* (*Reticulitermes*) *speratus* (Kolbe), the emergence ratio of soldiers increases with the number of larvae plus workers in colonies and a certain number of larvae plus workers is needed for the initiation of soldier differentiation. Supplementary reproductives can develop either from larvae-workers or nymphs but most frequently from nymphs combined with considerable numbers of workers. Caste differentiation is easily influenced by the composition of members in the colonies.)

CHEMICAL ANALYSIS

Becker, G., and Seifert, K., 1962, pp. 273-289. (Materials used by 21 termite species for nests and galleries, and dry fungus combs of 3 further species were analytically examined as to their contents of ash, lignin, and carbohydrates. Carton nests of *Nasutitermes, Microcerotermes,* and *Termes* species had an ash content of between 3% and 25% which varied with the distance between nest and soil. With Kalotermitidae and Termopsidae the gallery material consists almost exclusively of faeces. *Heterotermes* builds galleries with a mineral content of only 4% to 17% (like an ash content of 8% in the deposits in their tunnels) as well as others containing about 85% of ash. Galleries of *Reticulitermes* species showed an average ash content of 80%. The relation between lignin and carbohydrates in gallery material is connected with ash content. *Coptotermes* species produces deposits in wood, the mineral portion of which is below 10%; also the galleries may contain about 20% of ash only. Galleries of *Nasutitermes* species partly have an ash content less than 10%, partly a considerably higher one. The lignin portion in faeces and ash-free material of nests and galleries of Kalotermitidae and Rhinotermitidae is 65% to 69% or less, if pine is food, slightly lower if hardwood, the lowest about 40%. With *Kalotermes flavicollis* the lignin content after consumption of different hardwood species varied between 57% and 44%,

the relation of lignin content in pellets and consumed wood between 2.4:1 and 1.6:1. The preferred wood species had the highest coefficient. Apparently representatives of different termite families effect equal degrees of decay in wood.)

Bano, Z., Ahmed, R., and Shrivastava, H. C., 1964, pp. 380-381. (Seventeen amino acids have been identified in the proteins of the edible mushrooms *Lepiota* sp. and *Termitomyces* sp. The protein from the former contains a high percentage of leucine (8.9) and isoleucine (9.2), whereas that from *Termitomyces* sp. contains a high percentage of histidine (6.5) and arginine (8.5).)

Duperon, P., Hügel, M. F., Sipal, Z., and Barbier, M., 1964, pp. 257-262. (France, *Calotermes flavicollis,* cholesterol is the principal sterol of this termite as determined by a mass spectrometer.)

Fujii, N., 1964, pp. 213-216. (Free amino acids in *Coptotermes formosanus.*)

Fujii, N., Segawa, M., Ochiai, N., and Shimizu, K., 1962, pp. 7-11. (Free amino acids in *Coptotermes formosanus.*)

Nakajima, S., Shimizu, K., and Nakajima, Y., 1962, pp. 59-74. (Japan, *Coptotermes formosanus,* analyses of termite earth and runways, in runways on concrete bases the organic matter in the upper part was much greater than in the lower part (50.5% to 36.9% and 40.5% to 28.5%) and much greater than in the soil nearby; the nest contained the most organic matter. It is evident that the termites use the materials near by to construct the termite earth.)

Seifert, K., and Becker, G., 1965, pp. 105-111. (Chemical decomposition of broadleaved and coniferous wood species by different termites. The relative loss of cellulose amounted to an average of 85% with *Kalotermes* species; average 86% with *Heterotermes;* average 97% with *Reticulitermes;* average 94% with *Nasutitermes.* Relative loss lignin with *Kalotermes flavicollis* average 19%; with *Heterotermes indicola* 29%; with *Reticulitermes santonensis* 77%; with *Nasutitermes ephratae* 46%. Relatively largest decomposition cellulose and smallest lignin found in pine. With elm loss cellulose lowest; with poplar loss lignin highest; with beech in case of *K. flavicollis* decomposition of lignin extraordinarily poor. The utilization of food, with the aid of microorganisms, is by far more intensive with termites than with other wood-destroying insects.)

COMMUNICATION

Frings, H., and Frings, M., 1964, pp. 1-211. (Animal communication, in termites alarm scents, rasping sounds, or sounds by tapping body against nest, or by stridulatory ridges on body.)

Howse, P. E., 1963, pp. 258-267. (*Zootermopsis angusticollis,* evolution of the production of vibrations as a communication means among termites.)

1963a, pp. 256-268. (*Zootermopsis angusticollis,* several types of vibration movement or jerking behavior by individual termites recognized each occurring under different conditions of stimulation. Main behavior pattern giving rise to substratum vibration and usually audible sound which has been recorded.)

1965, pp. 314-315. (*Zootermopsis angusticollis,* subgenual organ registers particular pattern of sounds, associated jerking movement, "vertical oscillatory movement," V.O.M. In "complex oscillatory movement," C.O.M. body movement with no sounds, after laying of an odor trail. C.O.M. solely means arousing other termites. "Longitudinal oscillatory movement" a simple reflex response to a relatively low-level stimulus to antennal sensilla.)

Stuart, A. M., 1963a, pp. 85-96. (Communication of alarm in *Zootermopsis nevadensis,* sound plays no primary role, nor does glandular secretion, rather mechanical contact, directional vector by trail laid from point of disturbance to main area nest.)

Wilson, E. O., 1965, pp. 1064-1071. (Summary: pheromone systems have reached their highest evolutionary development in the social insects, most communication is chemical, a chemical signal is a pheromone, which may be olfactory or oral according to the site of reception. Pheromones have the central role in the organization of insect societies. There are nine categories of responses: alarm, attraction, recruitment, grooming (including assistance at moulting), exchange

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of oral and anal liquid, exchange of solid food particles, facilitation, recognition (of both nest mates and members of various castes), and caste determination either by inhibition or stimulation. Alarm is often synonymous with recruitment. In lower termites odor trails laid to breaks in nest wall, recruited workers assist in repelling invaders and repairing breaks. In higher termites which forage trails used to recruit workers to new food sources. Number alarm substances greater than all other pheromones, many are volatile, chemical identity discussed. In termites there is a remarkably complex and precise pheromonal caste control. In *Kalotermes flavicollis* (Fab.) the key caste is the pseudergate, which is capable, when the inhibitory pheromones are removed of transforming into a soldier or one of the two reproductive castes. The pheromones act by interfering with the endocrine system. The proportion of orphaned pseudergates that change into replacement reproductives shows a negative correlation with the volume of the corpora allata, while soldiers can be produced experimentally from pseudergates by implantation of the corpora allata of reproductives. It is likely that patterns of caste control vary greatly within the termites. Pheromones have been demonstrated in primitive genera. In the higher Termitidae, reproductives can be derived only from nymphs. A true worker caste exists which lacks the potential for caste alteration. Pheromones studied are those ingested to influence caste and those that are transmitted in volatile form through the air to attract or alarm. "Surface pheromones" such as colony odors are of fundamental importance but extremely difficult to study, they need further research.)

CONTROL

Allen, T. C., Esenther, G. R., and Shenefelt, R. D., 1961, pp. 1055-1056. (U.S., Sheboygan, Wisconsin, dieldrin incorporated into concrete mixtures, a wettable powder containing 75% was added leading to a concentration of 0.1 to 1.6%. One week after fabrication the block surfaces caused 100% mortality to *R. flavipes* workers exposed for only 1 minute. Exposures of nasutes and workers of *Nasutitermes columbicus* for 10 minutes killed 100% of the termites. Following a storage period of 4 months at 80° F. and 97% relative humidity blocks containing 1.6% dieldrin were still toxic to all termites, whereas blocks with 1.0% did not kill the termites after 30 minutes exposure.)

Amante, E., 1962, pp. 133-138. (Brazil, *Cornitermes cumulans,* insecticides as emulsions or dusts applied through hole in top nest by iron bar to reach center. After 95 days the best results were with Telodrin EC 15%; Aldrex 4 EC, 40%; Endrex 20 EC, 20%; Shell DD.)

Anonymous, 1960, p. 109. (Malaya, Rubber Research Inst.)

1960a, pp. 37-38. (Australia, Canberra, wood preservation by dip diffusion.)

1961, pp. 1-9. (Italy, damage and control, 1952-1960, list publications.)

1961a, pp. 46, 48. (U.S., down and horizontal drilling compared, down drilling, low pressure favored, table pressures.)

1961c, p. 40. (U.S., consistent, realistic certification form important for termite clearance report, chart with areas inspected and those not, helpful, charge should be made.)

1962, pp. 24, 26. (U.S. Veterans Administration require professional termite inspection before approving loans. There is indication that regional offices must determine information that must be included in the report. The extent of the liability of the operator is not clear.)

1962b, pp. 142-147. (U.S., infestation buildings by three basic routes: wood in contact with the ground, cracks in concrete slabs or foundations, shelter-tubes; reasons for increase in damage due to milder winters in north, more land is cleared, less food, more slab or low foundation construction, attached patios, decks, breezeways and garages, sapwood now used more susceptible than heartwood, better central heating plants. Protection by: sound construction, shields (now in disrepute), soil poisoning, pressure treated or naturally toxic, resistant woods.)

1962c, pp. 68-74. (U.S., discussions at Purdue's P.C.O. conference: Dr. A. E. Emerson (Univ. Chicago): termites ability to regulate temperature and humidity complicate control, parthenogenesis not important. D. H. Percival (Univ. Illinois): builders not preparing for future termite

attack, leaving access and wood debris. L. J. Berzai, an Indiana operator, drills rock foundations at a mortar joint, using gravity flow; for brick veneer where the sill plate is on the foundation, the plate is drilled allowing the chemical to flow down between the bricks; if there is a central hollow brick supporting pier drill and treat inside voids; if three horizontal layers of brick, drill from both sides, drill holes spaced every 18 inches. I. Hatfield, (wood Treating Chemicals Co.) described how to formulate desired concentration of insecticide; to determine dilution ratio subtract the percent of active ingredient desired from the percent of active ingredient in the concentrate and divide by percent of active ingredient desired. Then multiply by the number which results when the weight of the concentrate per gallon is divided by the weight of solvent per gallon, the final figure is the number of gallons of solvent required. N. R. Ehmann (N. A. Maclean Co.) discussed fumigation to control termites with methyl bromide, use of Halide lamp, remove all live objects, protect plants with water barrier, extinguish all open flames, turn off gas at meter, pipes should be bled of any remaining gas, objects with free sulfur molecules, such as foam rubber, should be removed, post warning signs, use Fumiscope to measure concentration at three levels, use proper tarps, wet down porous sand under area, temperature should be above 65° F. J. Kahn (Vogel-Ritt) discussed control of subterranean termites by fumigation with ethylene dibromide, EDB 15% solution in base oil applied at 1 quart per 25 square foot of slab area, effect of soil moisture on EDB movement most important factor in dispersion gas. G. Klepser (Dow Chemical Co.) stated sulfuryl fluoride, Vikane been successful in fumigation drywood termites in Florida and California successful, no odor problem, penetration superior to methyl bromide, ovicidal action poor, food clearances not yet granted, may be used later under slabs, special detector necessary for Vikane.)

1962f, pp. 64-70. (U.S., P.C.O. equipment directory for termite control 1962.)

1962o, pp. 80, 82. (U.S., (based on unpublished information from the late A. Zimmern) no uniform treatment of fill can be accomplished by drilling concrete slabs, chemical run off; sources of infestation cellulose waste, tree stumps, faulty drainage. Trench 3 feet deep around perimeter foundation, drill and inject chemical through side foundation about 2 inches below bottom gravel fill, apply chemical under low pressure, slow percolation. Infestation in fill-porches treated in same manner.)

1962q, pp. 40. 42. (U.S., National Pest Control Assocn. suggested a certification statement which might be a standard inspection form for the VA and FHA: "We have inspected the designated structure on the property at (address) and have found no visible evidence of termite damage and no visible structural damage from termite attack. This certification is warranted for ——— days.")

1962r, pp. 42, 44. (U.S., NPCA recommends commercial warranties for commercial establishments and suggests insurance companies be approached.)

1963a, pp. 9-10, 12, 16. (U.S., Pest Control's survey in 50 states showed that there was no standard acceptable statement accredited by every VA and FHA office across the country. Guarantees, inspection forms, and warranties are still open to industry discussion before a nationwide agreement on the use of warranties can be reached.)

1963c, pp. 72, 74, 76, 78. (U.S., cost inspection $7.77, operator should charge. Three types inspection: (1) "estimate," where infestation known, (2) "routine," to determine no wood-destroying insects present, (3) "certificate," change of ownership, condition of sale, liability justifies charge for inspection. Fixed water vapor and termite barriers installed at construction time prior to pouring concrete slabs, three kinds: asphalt emulsion with toxicant, sprayed on soil surface; film of plastic coated on one side with water-soluble paste containing a toxicant, which moves into soil when water table rises; polyethylene-backed, paper felt with a toxicant, fungicide, and oil impregnated in the material.)

1963f, pp. 74-80, 80-82, 87-89. (U.S., pest control equipment directory 1963, termite control, pp. 74-80; fumigation, pp. 80-82; safety pp. 87-89.)

1963g, pp. 92, 94-96. (U.S., flower box retaining walls have no bottoms, soil piled high in them source of infestation,

earth kept moist, difficult to drill, watering soil leaches chemical.)

1963k, pp. 50, 52, 54-55. (U.S., wood embedded in concrete can introduce termites into a dwelling, it must be located, removed, or treated, have hidden contact with soil. Cases cited, where hidden wood disguised, remedies detailed, more difficult in slab house.)

1963m, pp. 40, 42-43. (U.S., hazards of control in crawl spaces, TOs should proceed with caution. Low clearance, nails, broken glass, creeping eruption in south, steam pipes, electricity, faulty grounds, dust. Protect by wearing helmet, heavy gloves, spray, where dog waste, to kill hookworm nematodes, with 1 ounce salicylic acid in 5 ounce alcohol, insulate against damp soil, wear protective mask.)

1963n, pp. 68, 70, 72 and 74. (U.S., ventilation and decay control may help prevent termite infestation, control moisture by use of ventilators and vapor barriers, use wood preservatives.)

1963o, pp. 42, 46. (U.S., special skills and equipment needed, knowledge of type of construction, special control techniques, experience.)

1963q, pp. 35-44k. (U.S., chemicals in subterranean termite control revised, for approved reference procedures for subterranean termite control, Nat. Pest Control Assoc., 1951. A number of chemicals formerly recommended as soil poisons replaced by those more effective, described in detail, pp. 35-44, certain other chemicals for special uses described. List of chemical wood preservatives and their proper uses, p. 44. Precautions, toxicity, fire hazard, odors, property damage, application equipment, termite control chemicals, pp. 44-44k.)

1964e, pp. 13-14, 16, 18. (U.S., termite truck inventory of equipment for control listed. Job preparation, chemical treatment, structural repair, job cleanup, worker protection, equipment repair all need special equipment.)

1964f, pp. 48, 50, 54. (U.S., tips on more aggressive selling of termite pretreat contracts, advertising, personal contacts with builders, well-equipped truck, neat servicemen, color added to chemical.)

1964i, pp. 59-60, 62, 64, 66, 68, 70, 72, 75-76, 78. (U.S., directory of pesticides; pp. 78, 80, 82, list and address suppliers.)

1964m, pp. 36, 38, 40, 42, 44, 46, 48, 50-51, 54-55, 58, 60-62, 64, 66-68, 70, 72, 74, 76-80. U.S., equipment directory pest control 1964, itemized list products, suppliers and addresses.)

1964n, pp. 108-109. (U.S., modern methods of control, detection, ways of infestation, annual inspection, retreatment, replacement damage up to $5,000 excellent protection, racketeers.)

1964q, p. 70. (U.S., new inspection requirements for VA termite report broadens statement to include all wood-destroying infestations, and that damage has been corrected.)

1964u, p. 11. (U.S., California, the average number of complaints filed with the Structural Pest Control Board against each licensee in the fiscal year 1961/1962 was 0.91; for 1962/1963, 1.15; and for 1963/1964, 1.05. 5.6% of our licensees had five or more complaints filed against them, 2.4% had four, 3.5% had three, 9.2% had two, 24.4% had one, 54.9% had none. 88.5% of the licensees had fewer than three complaints filed against them. This 88.5% account for only 31% of the total number of complaints filed. Therefore 11.5% of the licensees account for 69% of the total complaints filed. A larger company does not have more complaints or a small company fewer.)

1964x, pp. 28, 30, 32. (Worldwide picture termite control, G. Hutton, U.S. Navy, stated drywood termites more formidable in tropical areas, pretreatment is most economical for subterranean termites. Control work where possible done by P.C.O.s. Phil Hadlington, Forest Entomologist of New South Wales, stated prevention is by use of soil poisons, eradication by blowing arsenical dusts into their tubes and galleries. V. Smith, U.S. Forest Service, stated so far tests of granular termiticides show the same results as emulsions.)

1965, pp. 5, 7, 9, 11, 15, 17, 19, 21, 22-23. (U.S., 1965, National buyers guide for pressure preserved wood products, list companies and addresses.)

1965a, pp. 18-19, 22, 25, 50. (U.S., Pest Control survey, industry successful, free inspections, price cutting bad, service only product for sale, public must realize, business methods improving. Shields are no longer recommended, use soil-testing kits, greater acceptance by public of industry, pretreatment will increase. National Pest Control Association help to industry, chlorinated hydrocarbons per-

sistent soil poisons, equipment will be streamlined.)

1965c, pp. 42, 44, 46, 48, 50, 52, 54, 99-100, 102. (U.S., Purdue Univ. 1965 conference gave P.C.O.s technical information on bird, rodent, and carpenter ant control, flies, and dermestids. Roach resistance and new chemicals for control were discussed. Better training, improvement of business methods were important subjects. On termites, Dr. F. M. Weesner is studying swarming habits of termites in connection with control. She gave some biological notes. A symposium was held on rodding to replace trenching in using soil poisons. Use of rods on slab-on-grade houses was described in detail.)

1965d, pp. 60-62, 65, 68, 70, 72-76, 78, 80-82, 84, 85-87. (U.S., directory of pesticides, insecticides, fumigants, rodenticides, miticides, insect repellents, bird control products, bird repellents, animal repellents, suppliers and addresses.)

1965e, pp. 32, 36, 38, 40, 42-44, 46, 48, 51-52, 54, 56, 58, 60, 62, 64-65, 66, 68, 70, 72. (U.S., 1965 equipment directory, alphabetically listed for all types of control, with a list of suppliers and addresses.)

1965g, pp. 60A and 60B. (U.S., revision Natl. Pest Control Assoc's. approved reference procedures for termite control, reference standards for preconstruction soil treatment. Toxicants and concentrations, for slab-on-ground construction, crawl space and basement construction.)

1965h, pp. 8-1 to 8-19. (U.S., Army, Navy, and Air Force Military Entomology Operational Handbook, Chapter 8, Termites, revision Army Technical Manual, TM5-632 Feb. 1956. Description of types castes, habits, damage, inspection form, construction faults, prevention of infestation by subterranean termites by mechanical and chemical methods, revision list soil poisons: chlordane 1%, dieldrin 0.5%, aldrin 0.5%, heptachlor 0.5%, water emulsions, dosages for various types buildings; control drywood termites by screening, sanitation, injection chemicals, wood preservation, fumigation.)

1966, pp. 13-15. (U.S., masking agents and perfumes are most often oil soluble; 54% of P.C.O.s who returned survey forms sent by Pest Control used masking agents in indoor insecticide sprays; familiar aromas preferred by 27% of customers. Lemon or citrus choice of industry. Scents preferred are quality fragrances.)

1966c, pp. 53-74. (U.S., Pest Control's 1966 directory of pesticides: pp. 53-65, insecticides; pp. 65-68, fumigants; pp. 68-69, rodenticides; pp. 69-70, miticides; p. 70, avicides, pp. 70-72, repellents; pp. 72-74, masking agents.)

1966d, pp. 86-92. (U.S., Nat. Acad. Sci. public symposium on scientific aspects of pest control, participants Government officials, prominent scientists. Academy's neutral approach shows expert opinion no longer weighted against use of chemical pest controls if applied carefully. E. P. Lichtenstein listed 10 most important factors that influence persistence insecticides in soil: soil type, moisture, temperature; wind or air movement; cover crops; soil cultivation; mode application insecticide to soil; formulation; and soil microorganisms. Chlorinated hydrocarbon group more persistent than organophosphorous.)

1966g, pp. 48, 50, 52. (U.S., FHA revised standards for use of soil poisons near independent water systems, paragraphs 815-2.5, a to e, 1102-3.5. Treatment, application, guarantee, minimum distance between wells and sources of pollution, exceptions.)

1966i, pp. 20, 22, 24, 28, 30, 32, 34, 36, 38, 40, 42, 45-46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66. (U.S., Pest Control's 1966 equipment directory, materials, equipment for control various insects and rodents, listing suppliers with addresses.)

Armed Forces Pest Control Board, 1963, pp. 1-14. (U.S., shields obsolete, soil poisons, impregnated wood recommended. Soil poisons BHC and chlorinated hydrocarbons, including heptachlor. Dosages given water emulsions preferable.)

Beuerle, O. K., 1961, pp. 150, 152. (Austria, contact insecticides in soil, mixing with earth removed to depth 4½ feet, then replaced, drilling wood.)

Bhatnagar, S. P., 1962, p. 223. (India, Rajasthan, during 1958-1959 termites caused considerable losses through attacks on germinating cotton seeds and young crops under unirrigated conditions. Sevin at 10 or 15 pounds per acre applied before sowing gave higher yields and less damage.)

Bindra, O. S., 1961, pp. 277-282. (India, North West Madhya Pradesh, DDT and

BHC 50% wettable powder, chlordane 75% emulsifiable concentrate, toxaphene 25% E. C., dieldrin 18% E. C. each at 2 ounce and aldrin 40% E. C. at 1 ounce per nest dissolved in 10 gallons water and poured into nests destroyed colonies at a cost cheaper than digging out nests. Mixing 5% aldrin dust with wheat seed just before sowing at the rate of 20-40 pounds gives protection crops and higher yield.)

Bonaventura, G., 1961, pp. 237-254. (Italy, Inst. Pathology of Books and Termite Control in Italy (Rome), government act since 1952 permits government to conduct scientific research, antitermite protection and disinfestation. The chief control measures and expenses on the premises of State and Notarial Archives, Libraries and National Monuments are listed.)

1963, pp. 9-19. (Government act since 1952 made it possible to fight termites in Italy officially; description criteria followed by "Commissione Interministeriale per la lotta Antitermitica"; scientific and field research.)

Brown, K. W., 1962, pp. 1-18. (Uganda, termite control in Eucalyptus plantations.)

Brownstein, P. N., 1962, pp. 9, 11, 12. (U.S., acceptable statement for a termite report to the Veterans Administration is: "On this date I have made a thorough inspection of these premises, and there was no visible evidence of termite infestation or damage." A simple, practical inspection form should be provided. Inspections should be made by professional P.C.O. Accuracy will determine continued employment.)

Bruce, E. L. Co., Inc., 1963, pp. 1-2. (U.S., in remodeling plans include termite control, pretreatment far less costly, methods infestation described and illustrated; through wood in direct contact with ground; through cracks in slab foundations and piers; through shelter tubes over materials they cannot penetrate. Control; sanitation, drainage, pretreatment by licensed termite control operator by soil poisoning. Cross ventilation and the use of a polyethylene waterproof membrane are recommended.)

California Structural Pest Control Board, 1962, pp. 12-13. (U.S., California, complete report from governor June 1961, 1962, total to end month fiscal year 1960-1961, 1961-1962, applications, licenses, renewals, inspection reports, complaints, investigations, actions.)

1962a, pp. 12-13. (U.S., California, complete report from governor July 1961, 1962, total to end month fiscal year 1961-1962, 1962-1963 as for June.)

1963, pp. 12-13. (U.S., California, report from governor November 1961, 1962, total to end month fiscal year 1961-1962, 1962-1963.)

1963a, pp. 12-13. (U.S., California, report from governor April 1962, 1963, total to end month fiscal year 1961-1962, 1962-1963.)

1963b, pp. 12-13. (U.S., California, report from governor July 1962, 1963, total to end month fiscal year 1962-1963, 1963-1964.)

1964, pp. 12-13. (U.S., California, report from governor November 1962, 1963, total to end month fiscal year 1962-1963, 1963-1964.)

1964a, pp. 12-13. (U.S., California, report from governor January 1963-1964, total to end month fiscal year 1962-1963, 1963-1964.)

1964b, pp. 16-17. (U.S., California, report from governor April 1963-1964, total to end month fiscal year 1962-1963, 1963-1964.)

1964c, pp. 18-19. (U.S., California, report from governor September 1963-1964, total to end month fiscal year 1963-1964, 1964-1965.)

1965, pp. 12-13. (U.S., California, report from governor November 1963-1964, total to end month fiscal year 1963-1964, 1964-1965.)

1965a, pp. 12-13. (U.S., California, report from governor January 1964-1965, total to end month fiscal year 1963-1964, 1964-1965.)

1965b, pp. 12-13. (U.S., California, report from governor March 1964-1965, total to end month fiscal year 1963-1964, 1964-1965.)

1965c, pp. 10, 12-13. (U.S., California report from governor July 1964-1965, total to end month fiscal year 1964-1965, 1965-1966.)

1965d, p. 10. (U.S., California, informational letter, September 2 from January 1 through June 30, 1965, there were filed with the Structural Pest Control Bd., 82,140 notices of work completed at a total cost of $14,453,048, average cost per job $172.00. The lowest price was $25, highest $2,350.)

1965e, pp. 20-21. (U.S., California, report from governor September 1964-1965, total to end month fiscal year 1964-1965, 1965-1966.)

1966, p. 65. (U.S. California report from governor December 1964-1965, total to end month fiscal year 1964-1965, 1965-1966.)

Cancienne, E. A., 1961, pp. 1-8. (U.S., Louisiana, guard your home against termites.)

Chatterji, S., and Sarup, P., 1962, pp. 5-12. (India, cotton.)

Chatterji, S., Sarup, P., and Chopra, S. C., 1960, pp. 356-357. (India, cotton crop.)

Chawala, D. R., 1965, pp. 11-12. (Termite damage leading to poor crop solved by use superphosphate and aldrin.)

Chhotani, O. B., 1962, pp. 476-478. (India, *Kalotermes beesoni* (now in *Bifiditermes*) has been recorded infesting apple and other trees in Pakistan, and is a serious pest of *Ficus bengalensis* in Panjab, India. 38% of alates emerged on night of July 11/12, 1959, all were females. (Fecal pellets are ovoid.))

Choudhuri, J. C. B., 1961, p. 125. (India, Allahabad, new approaches to applied termitological researches.)

1963, pp. 189-192. (India, understanding of termites with special references to agriculture, forestry, etc., essential.)

Clark, B., 1963, pp. 18, 20, 22, 24. (U.S., Cleveland, Ohio, do-it-yourself owner injured himself unaware of termite damage to home. Home treated by Terminix of Cleveland, Ohio, illustrated account of damage and method of treatment.)

Clements, W. B., 1963, pp. 54, 56. (U.S., NPCA Termite Committee urges program of minimum standards for corrective termite work to secure uniformity and regulations approved by the industry.)

Coaton, W. G. H., 1962c, pp. 318-327. (Karoo, South Africa, *Microhodotermes viator* due to unavailability of local supplies veld hay baiting uneconomic. Where mounding over nest sites occurs, applying 24% aldrin emulsifiable concentrate to the nest by injection at a cost of 2.08 per nest. Where mounding does not occur, sprays of 18.5% dieldrin emulsifiable concentrate sprays applied directly to standing vegetation offers promise from the ground. Probably the only practical method would be the use of aircraft.)

Conner, F. B., 1965, pp. 28, 32, 34. (District of Columbia, Marumsco, successful pretreatment 9000 homes of three types with chlordane soil poison described and illustrated, 5-year guarantee to protect buyer.)

Cruz, B. P. B., Figueiredo, M. B., and Almeida, E., 1962, pp. 189-195. (Brazil, State of São Paulo, *Syntermes* sp. pest of peanuts controlled by 2.5% heptachlor or 2.5% aldrin dusts at from 13-17 kg/ha.)

Das, G. M., 1962, pp. 229-231. (North-East India, Assam, tea gardens in Darrang and Cachar districts control of live-wood-eating termites *Microcerotermes* spp. and *Odontotermes assamensis, O. parvidens* and *O.* spp. scavenging termites damage to trunks tea bushes. Latter controlled by introducing DDT, BHC, aldrin and dieldrin into mounds through holes, followed by pouring down sufficient water, elimination dead and diseased wood and covering exposed wood with protective paint. Live-wood-eating termites were controlled by applying aldrin and dieldrin at the rate of 2 pounds active material per acre, latter slightly more effective, as spray or dust to soil. Pretreatment by sanitation and use protective paint "indopaste." Treatment effective for 5 years.)

Davletshina, A. G., 1963, pp. 74-83. (U.S.S.R., Golodnaya steppe, *Anacanthotermes turkestanicus* control deep plowing and application of DDT or BHC dust, at rate 100 kg/ha, during subsequent tramping and rolling land before construction. Soil fumigation with ethylene dibromide at rate of 100 g/m^2, is proposed to exterminate isolated nests.)

Deoras, P. J., 1962, pp. 101-103. (India, Bombay, many mounds *Odontotermes* necessary to locate primary colony for control by dusts, suspensions and emulsion insecticides, treating secondary mounds not effective. Queen cell located by magnetic compass, parallel to magnetic meridian. *Heterotermes indicola* was controlled by spraying building with 2% suspension DDT or BHC.)

Dresner, E., 1960, pp. 24-25. (South America.)

Dutt, N., 1962, pp. 217-218. (India, control *Microtermes obesi* attacking jute stem, 0.4 aldrin surface soil and 1½ inches below gave 100% mortality 24 hours after treatment.)

Dyer, T. A., 1966, p. 61. (U.S., Tampa, Florida, applicants for FHA housing in West Tampa advised no furniture or household furnishings can be moved if it contains drywood termites. Infested furniture should be destroyed and replaced or fumigated by a P.C.O. Evidence required that furniture is termite-free before occupancy.)

Ebeling, W., 1962, 451-454. (U.S., relation of lipid adsorptivity of powders to their suitability as insecticide diluents, tests against insects.)

Ebeling, W., and Pence, R. J., 1965, pp. 1-16. (U.S., California control western subterranean termite; dark, western drywood termite, revision of 1958 edition.)

Ebeling, W., and Wagner, R. E., 1963, pp. 14-17. (U.S., California, Dri-Die 67 fluoridated silica aerogel, of Davison Chemical Co., Baltimore, Md., applied at rate 1 pound per 1000 square feet in attic, prevented reinfestation by drywood termites; applied with electric duster. Dust also recirculated through the walls by gun. Wall voids treated at time of construction practical.)

1964, pp. 20-22, 24, 26, 28, 31-32. (U.S., California, built-in termite control, pretreatment with soil poisons to prevent attack by subterranean termites and dusting attics with Dri-Die 67, a fluoridated silica aerogel to prevent attack by drywood termites outlined.)

Federal Housing Administration, 1963, pp. 1-500. (U.S., multifamily housing, under these standards, soil treatment gets somewhat greater recognition than under standards for one and two living units. Of the two chemical barriers recognized it is more economical than the rather extensive use of pressure-treated wood. In region 1, very heavy termite infestation, a chemical barrier is required for all slab-on-ground construction. In areas of moderate to heavy infestation, where termite protection is not specifically exempted by the FHA field office, slab-on-ground construction must be protected by the use of a chemical barrier or monolithic concrete slab design. Shields are not included as acceptable protection for slab-on-ground construction. Where soil treatment is required, individual water-supply systems are not acceptable. Heptachlor has been added to the accepted chemicals, trichlorobenzene dropped.)

1966, pp. 1-4. (U.S., Minimum Property Standards for One and Two Living Units, revision, paragraphs 815-2.5, 815-3.6, 1102-3.4, and 1102-3.5; included are provisions for use of individual water supply systems in conjunction with soil-treatment method, exceptions; and an alternate method of application of soil treatment, rodding; minimum distance 100 feet from well to soil treatment. Lindane is dropped as a soil poison. The soil treatment firm furnishes the home owner a guarantee of the effectiveness of the treatment if infestation found within period.)

Fernando, H. E., 1962, pp. 205-210. (Ceylon, Kalotermitidae damage tea and rubber; control by injecting paris green in infested trees.)

Floyd, J., 1965, pp. 46, 49, 50. (U.S., Decatur, Ill., library treated for termites by soil drill treatments, then retreat necessitated by discovery of wood construction on earth, instead of concrete, hidden behind a built-in bookcase.)

Gallo, P., 1961, pp. 214-220. (Italy, "Centro di studi per la lotta antitermitica" studied toxicity insecticides for 8 years, also alterations brought about in tissues mammals. New method localizing adenosine-triphosphate (ATP) in muscular tissue developed, applicable in investigations concerning insecticides which interfere with oxidative phosphorylation but also pathology and biochemistry.)

1963, pp. 120-126. (Italy, research work of above organization. List of various archives and libraries where work on protection of books has been carried on.)

Gay, F. J., 1963b, pp. 47-60. (Australia, 150 species termites known five cause 95% of the damage: *Mastotermes darwiniensis, Coptotermes acinaciformis, C. frenchi, C. michaelseni* and *Nasutitermes exitiosus*. In 1956 the annual loss to poles, cross-arms and cables was 325,000 Australian pounds. In 1961 there were more than 150 pest control firms operating in the five main capital cities, more than half dealing with termites. Annual expenditures due to termite damage: A£2,000,000.

Subterranean termites main problem. Housing authorities require termite-proof construction, including termite shields over foundations, not completely effective, inadequacies in installation. Also low subfloor clearance in Perth and

Adelaide allows *Coptotermes* to build stalagmite tubes up to subfloor timbers.

Shortage limits use naturally resistant timbers, eucalypts available locally; jarrah, red gum, ironbarks, etc., and noneucalypts: turpentine, brush-box and cypress pine.

Australian preservative plants provide treatments of sawn timbers of a "dip-diffusion" with water soluble mixtures of boric acid and sodium fluoride, with or without the addition of sodium arsenate and dichromate applied to green sawn timber, followed by block stacking for several weeks to allow the preservative to diffuse into the wood. This was a successful and inexpensive method.

A termite-proof veneer of karri for plywood flooring was similarly dip-diffused. Dry salt retention was just under 0.3 pounds per cubic foot. A 3.2 mixture of zinc chloride and arsenic pentoxide was effective against *Coptotermes* and *Nasutitermes.* Sodium pentaborate was effective against *Coptotermes* but not against *Nasutitermes.*

By incorporating 0.75% pentachlorophenol, or a fractional percentage of arsenicals, or aldrin or dieldrin, building boards, either particle or fiber, can be made resistant to termites.

Treatment with soil poisons—chlorinated hydrocarbons at a dosage 0.5 gallons per cubic feet were effective after 6-7 years. Pest control operators offer pretreatment up to 10 years guarantee.

Termite-proof concrete, "no-fines," a mixture of aggregate with the substitution of a 0.5% emulsion of either dieldrin or aldrin for water was produced.

Existing infestations in buildings by *Nasutitermes* is from a nearby mound which can be destroyed. *Coptotermes* and *Mastotermes* central nests are difficult to locate and occupied runways in the building must be treated. Arsenic trioxide, white arsenic most effective dust, quantities as low as 1.75 g. will kill a colony of 1.5 million *Nasutitermes exitiosus* within 2 weeks, is the most widely used poison by P.C.O.s. No evidence that arsine gas is produced. Cost of liquid chlorinated hydrocarbons too high to compete with white arsenic except in infested trees where an emulsion will be harmless.

Gases are not effective in Australian termite nests due to their complex structure.

Poison baits have not proven to be effective.)

Ghilarov, M. S., 1962, pp. 131-135. (U.S.S.R., Turkmenia, *Anacanthotermes turkestanicus* damages buildings in settlements. Sleepers in contact with soil are replaced by ferroconcrete permanent way. Adults may be controlled during swarming by aerosols. Antitermite methods of construction, as practiced in other countries, where termites are injurious are adaptable.)

Ghose, S. K., 1964, pp. 87-91. (India, insecticidal control of *Microtermes* sp. damaging wheat crop.)

Goulding, R. L., and Every, R. W., 1965, pp. 376-383. (U.S., Oregon, chemical control termites.)

Greaves, T., 1962, pp. 1-17. (Australia, colonies in trees: *Porotermes adamsoni* can be greatly reduced by forest management; *Coptotermes* and *Trinervitermes* by dusts of chlorinated hydrocarbons blown into galleries.)

1962a, p. 64. (Australia, *Coptotermes acinaciformis,* 2 ounces of 2% dieldrin effective when blown into aeration galleries leading from the bark of trees to termite nurseries.)

1963, pp. 74-76. (Australia, *Coptotermes acinaciformis,* 0.25 Telodrin when applied as a dust to aeration galleries was just as effective as when applied in auger holes to the nursery in trees.)

1964, pp. 1-4. (Australia, aldrin, dieldrin, telodrin are very effective against *Coptotermes acinaciformis* when applied as dusts to colonies or as emulsions to soils.)

1965, pp. 46. (Australia, N.S.W., hand duster applied 2 ounces per colony aldrin, dieldrin and telodrin, and ½ ounce white arsenic into nursery or through aeration galleries effective.)

Gunn, W. C., 1964, pp. 50, 52, 54, 56. (U.S., California, polyethylene damp proofing membrane, improperly installed, led to infestation, had to be corrected in control operations.)

Gupta, B. D., 1960, pp. 961-977. (India, studies control termites in sugarcane.)

Hadlington, P., 1965, pp. 36, 38. (Australia, N.S.W., subterranean termites *Coptotermes acinaciformis* and *Schedorhinotermes intermedius* cause about 90% of damage. Control is by eradication, using

finely divided arsenic trioxide and ferric hydroxide blown directly into the nest or gallery system, and prevention, using soil treatment with chlorinated hydrocarbons.)

Harris, W. V., 1961, pp. 1-187. (Tropics, Africa, queen removal, chemical and physical barriers, fumigation, nest fragmentation.)

1962c, pp. 179-181. (Prevention of termite damage to buildings with special reference to low-cost housing in humid tropics, damage considerable, 100 species termites recorded from buildings in world, 47 serious, drywood termites 6, *Mastotermes* 1, subterranean termites 25, ground or tree nesting 15. *Cryptotermes* particularly important drywood termite, *Coptotermes,* subterranean, mound building *Macrotermes* and *Odontotermes* in Africa, India, and Southeast Asia, *Microtermes* also important. In Ceylon, Mauritius, and Central America, *Nasutitermes* is responsible for much damage. Design, drainage, ventilation, pier foundations, inspection and mechanical barriers; sanitation, soil poisoning, use of resistant or chemically impregnated timbers, careful supervision. Selection of proper sites and soil poisoning, 0.3% dieldrin, and a concrete apron 6 inches around the slab, termite-proof concrete mix with dieldrin are most practical for low-cost housing.)

1965, pp. 33-34. (World, review of work on termite control, cost in various countries, protection of buildings, soil poisons, mineral dusts, structural modifications, resistant and treated wood. Damage to plastics, trees, and crops are also discussed. Bibliography.)

Herfs, A., 1963, pp. 92-100. (Summarizes papers on damage and control termites in Tropics, by W. V. Harris 1960 Termite Res. Unit reprint 42, 48, 1962. W. A. Sands repr. 43, 1960, 47, 1961. W. G. H. Coaton Sci. Bull. No. 375 1958. L. G. E. Kalshoven 1962 observations on *Coptotermes.*)

Hoon, R. C., 1962, pp. 141-143. (India, Hirakud Dam project, Orissa, longest earth dam in world, in site area termites penetrate top soil, few in moorum zone 32-38 inches deep, decrease with increasing depth below ground, but to depth 10 feet where top soil overlies moorum. Remove mound nests, strip soil 6-8 inches of top.)

Indian Council of Agricultural Research, 1957-1958. (India, annual report, *Cyclotermes* spp. in wheat, sugarcane, and cotton and *Odontotermes* sp. on wooden poles are serious pests. Aldrin, chlordane and dieldrin gave significant control in cotton. In Gujarat dieldrin, aldrin, or endrin applied as a dust in the furrows before cane sets were planted, or else applied as a paste at the two ends of each cane set gave better control than applying BHC at 50 pounds per acre along the furrow. Dusts arranged in percentage of decreasing germination of sugarcane were: 2.5% dieldrin, 2% aldrin, 1% endrin, 5% chlordane and 1% aldrin.)

Isherwood, H., 1963, pp. 8-10. (U.S., vice president The Antimite Co., St. Louis, Missouri advocates 17 points in detail for efficient control subterranean termites. Comments on most of these points by Ken Scott, editor P.C.O. News, Los Angeles, Calif.)

1965, pp. 78, 80. (U.S., St. Louis, Missouri, termite control job can be justified by sketch of foundation, list of infestation points and detailed eradication plans to explain necessary work and cost.)

Jacquiot, C., 1961, pp. 151-164. (France, *Reticulitermes santonensis* by use preserved wood.)

James, F. R., 1962, pp. 29-33. (U.S., how to discover and destroy termites in homes of different types, soil poisons, trenching, drilling; prevention with concrete caps or shields on foundations.)

Jen, Da-Fong, 1964, pp. 49-60. (China, termites are important pests of sugarcane, particularly in arid upland regions. In Hainan Island six species are injurious, species of *Odontotermes* being the most important. Damage is greatest during periods of low rainfall. Good control obtained in field tests by dusting cut ends of seed pieces with 5% aldrin, 10% chlordane, 1% endrin, 5% DDT or 0.5% BHC. Or dipping them in a mud slurry containing 0.5% aldrin or dieldrin, 0.35 chlordane or 0.25-0.35% toxaphene.)

Johnston, H. R., 1965, pp. 34-37. (U.S., summary of preventive and remedial control methods of the U.S. Dept. of Agriculture for subterranean and drywood termites.)

Kenaga, E. E., 1963, pp. 67-103. (Commercial and experimental organic insecticides (1963 revision). Indexed as to their scientific, common and trade names,

code designations, uses and manufacturers.)

Kenjo, Y., 1963, pp. 132-134. (Studies on termite control method in U.S.A.)

Kerr, E., 1962, pp. 8-13. (U.S., control.)

Kirthisinghe, F., 1961, pp. 8-15. (Ceylon, coconut trees.)

Koch, C. D., 1965, pp. 19, 21-22. (South Africa, tackle an extensive program to eradicate *Hodotermes mossambicus* destroying the grass veld.)

Krause, E., 1962, pp. 162-163. (Germany, consideration of the voices of the press on the theme of protection of wood for insect control, including termites, a termite attractant that might be practical in termite control.)

Krishnamoorthy, C., and Ramasubbiah, K., 1962, pp. 243-245. (India, Andhra Pradesh, control of *Microtermes obesi* attacking wheat and *Odontotermes obesus* attacking sugarcane, fruit plants and coconut, aldrin 5% dust applied to the soil at 20 pounds per acre is better than 5% BHC.)

Krupnick, E., 1961, pp. 42, 44. (U.S., portable plumber's heater used when drilling asphalt tile, 500° at nozzle.)

Kurir, A., 1963, pp. 67-70. (Austria, *Reticulitermes flavipes* possibility using atomic wastes in open country, radioactive cobalt (60 Co) in soil, or strontium (90 Sr.) affect gonads termites, precautions outlined.)

Lowe, R. G., 1961, pp. 73-78. (Nigeria, termite attack on *Eucalyptus citridora,* with Dieldrin and BHC.)

Luppova, A. N., 1962, pp. 103-109. (S.S.R., methods of planning and improvement of house construction towards termite-proofing.)

Lyon, S. R., 1963, pp. 46, 48, 50. (U.S., Arizona, rebuttal of A. Zimmern Pest Control, Oct. 1962, p. 80, faulty fills create gaps pumping toxicant through floor would result in "washing" fill into voids, cellulose debris under building offers sources infestation, suggest treatment through foundation walls below level top finish fill at very low pressure. Junk fills are unusual, wall treatment will not affect cellulose debris. Overall treatment under slab only answer. Colonies may skirt foundation barrier. Poison all subslab soil, drill floors as well as foundations wall in Arizona.)

Lyons, F. H., 1964, p. 52. (U.S., more than four million homes treated for termites since 1936, about two million newly infested houses each year, of which only one-fifth are reported and treated, according to the Terminix division, E. L. Bruce Co., Memphis, Tenn. Three commonly accepted reasons for termites' widespread proliferation and slow but steady march to the north: 1. Milder northern winters, wider use of central heating. 2. More homes being built, termite's natural breeding grounds in woodlands being cleared away, turn to man-made structures. 3. The buildings of homes on a low slab. Control: Annual inspection all buildings in termite belt, build out termites. The termite belt practically all the United States. Termites also on the increase in Canadian provinces of Nova Scotia, New Brunswick, Quebec, Ontario, and British Columbia reported.)

Mallis, A., 1964, pp. 219-324. (U.S., three types termites, dampwood, drywood, subterranean.)

Manuel, W. W., 1964, pp. 20-22. (U.S., California, legal requirements of a "termite report," careful inspection, no misrepresentation, failure may result in disciplinary and civil actions for fraud or negligence, diagram should show location of infested areas, refer to inaccessible areas not inspected, make corrective recommendations, important to state scope of report.)

Marechek, G. I., 1963, pp. 49-73. (U.S.S.R., *Anacanthotermes turkestanicus* control in residential and industrial structures, inclusion of DDT into the composition of wall bonding mixtures (0.15% of dry weight of the cement composition) kills termites on contact with the dry mixture; toxic for over 2 years. In laboratory termites dusted with DDT and planted in an isolated colony transmitted the toxic agent on contact resulting in total mortality of the colony within 7-9 days. Saturation of wood blocks with a DDT emulsion in concentrations of 0.1 to 0.05% of active ingredient killed on contact. DDT 0.01% and BHC 0.02% dusts mixed with soil in trenches 0.8 m. deep around infested houses remained toxic longer than 2 years.)

Mathieu, H., 1962, pp. 97-103. (Europe, lists termites, describes habits, distribution, damage to wood in buildings, control: soil poison in trench at wall, drilling floor

and walls and injecting chemical under pressure, pointing up (sealing) holes with cement, coating or injecting chemical on or in wood.)

Mathur, R. N., 1962a, p. 281. (India, control of termites attacking forests, crops and products and prevention of attack very important, more than 100 species of termites involved, wide range of habits, taxonomy and biology must be studied before effective control can be prescribed.)

Mathur, R. N., Chatterjee, P. N., and Thapa, R. S., 1965, pp. 1-23. (India, Dehra Dun, protection freshly felled stored timber, *Shorea robusta* and *Terminalia belerica,* by various insecticides, relative prophylactic efficacy.)

Metcalf, R. L. (Ed.), 1965, pp. 1-6289. (Advances in pest control research, chemical control, insecticides, fate chemicals in soil, microorganisms, toxicological, resistance, etc.)

Moore, H. B., 1963, p. 103. (U.S., North Carolina, U.S. Dept. Agriculture recommendations.)

Newsam, A., and Rao, B. S., 1963, p. 99. (Control *Coptotermes curvignathus* with chlorinated hydrocarbons.)

New South Wales, Dept. of Agriculture, Entomology Br., 1964, pp. 1121-1122. (Australia, chemical control in buildings, arsenical dusts, soil poisons (chlordane, dieldrin), chemically treated timbers.)

Oregon, State Univ., Federal Coop. Ext. Serv., 1962, pp. 1-6. (U.S., Oregon, control dampwood termite [*Zootermopsis angusticollis*] primarily problem moisture control. Improve ventilation, drainage. Replace damaged timbers with pressure-treated wood. Remove cellulose-containing debris. Use soil poisons to destroy colonies.)

Patel, R. M., 1962, pp. 219-221. (India, Gujarat, *Odontotermes obesus* and *Trinervitermes rubidus* attacking field crops, control by use of 5% BHC in drill with seed (56 pounds per acre) had been over 80% with increased yield of 33.3% to 43.4%; treatment of wheat seed 2 pounds of 50% BHC per 112 pounds seed reduced attack by 86% and increased yield by 55.9%; 95% of mango trees were protected by painting bases of trunks with crude oil emulsion containing 5% of 99% BHC (13.5% gamma).)

Paul, C. F., Agarwal, P. N., and Ausat, A., 1965, pp. 114-117. (India, toxicity *Acorus calamus,* sweetflag, to *Heterotermes indicola* in higher concentrations petroleum ether extract less than DDT.)

Pawar, J. G., and Sood, N. K., 1964, pp. 17-19. (India, when forearmed against them, termites need hold no terror for the farmer.)

Pruthi, H. S., and Batra, H. N., 1960, p. 96. (North West India, *Microtermes mycophagus* attacking young peach and other fruit trees especially in nurseries, infestations checked: 2% chlordane emulsion stirred well in soil about trunk; spraying bark, about 25 pounds of 5% DDT or BHC dust in soil about trees.)

Ramage, A., 1964, pp. 26-27. (Australia, N.S.W., use ethylene dibromide to control *Coptotermes* and *Nasutitermes* colonies, 15% weight/volume in power kerosene, 1 pint injected into nest.)

Ramsden, C. B., 1962, pp. 48, 50. (Mexicali, Mexico, *Reticulitermes hesperus,* waterlogged soil created pressure problems under slab of office vault, oil solutions used would not penetrate wet soil until pressure relieved.)

Ratner, H., 1963, pp. 38, 40, 42. (U.S., South Jersey, leaks due to improper flashing lead to second-story infestations by subterranean termites, treat joists with Woodtreat T/C, after removing source moisture, after all windows opened, minute amounts EDB injected into wall voids, attic also dusted with Dri-Die silica gel powder. DDVP fumigant has replaced EDB in later cases as safer. It is used in concentrated form in minute quantities, being injected into wall cavities with a syringe.)

Reddy, D. B., 1962, pp. 225-227. (India, the chlorinated hydrocarbons have been effective in controlling termites injuring agricultural crops, BHC is most widely used, the dosages vary from ¼ to 3 pounds per acre. Care must be taken especially with BHC in adverse effect on crops, where aldrin and dieldrin can be used. Termites are most active in June-July to February-March. Control must be applied at a time best suited to the various crops.)

Reno, J., 1962, pp. 26, 28. (U.S., basement house, methods of entrance by termites, proper clearance, basement windows, door framing, sill and frames basement windows pressure-treated with oil preservative, use heartwood of resistant wood, or concrete. Steps with bottom

step concrete or pressure-treated wood. Shield between top step and house, between porch and house. Two inches should separate supports for porch and steps and the house; have soil cover over enclosed earth. Inspect regularly, destroy tubes, poison soil. All wood should rest on concrete, wood inset in walls should rest on metal and have an air space around sides and ends. Masonry walls should be capped with 4 inches of reinforced concrete.)

1962a, p. 30. (U.S., crawl space house, methods of entrance by termites, clearance of 18 inches, solid poured concrete foundations, or 4-inch reinforced cap on top masonry foundations, shields, inspection, destruction tubes, soil poison, no wood in contact with soil, soil cover, no outside attachment to house.)

1962b, pp. 32, 33. (U.S., slab on grade house, houses with slab floors should have good drainage, no wood debris left in soil, no tree stumps or roots. A rot- and termite-proof vapor barrier soil cover with a vapor transmission rate of one-half perm, ground or soil poisons, and a well-constructed slab are the most important protective methods.)

1962c, pp. 1-4. (U.S., a combination of the three above papers with illustrations.)

Rescia, G., 1963, pp. 123-133. (Conservative treatment of relics in the Garibaldi House with xylamon, wood preservative.)

Roonwal, M. L., and Chatterjee, P. N., 1961, pp. 67-78. (India, Dehra Dun, *Odontotermes obesus*, destruction of mounds with chlorinated hydrocarbons, the concentration of the insecticide and total quantity of the liquid are important factors. Minimums giving complete destruction of the colony within a week are:

0.005% gamma BHC (9000 cc. liquid) per 10 cu. ft. vol. of mound cost 18 nP. (naye paise)

0.04% DDT (9000 cc. liquid) per 10 cu. ft. vol. of mound 20 nP.

0.025% dieldrin (9000 cc. liquid) per 10 cu. ft. vol. of mound cost 26 nP.

0.025% aldrin (9000 cc. liquid) per 10 cu. ft. vol. of mound cost 21 nP.)

1962, pp. 211-212. (India, Dehra Dun, destruction mounds *Odontotermes obesus* with chlorinated hydrocarbons with the same results as above.)

Roonwal, M. L., Chatterjee, P. N., and Thapa, R. S., 1961, pp. 76-116. (India, field experiments with one to three coat brushings of timber with BHC, DDT, coal tar creosote, etc. in 1950-1955, soil poisoning and mud-wall poisoning with various dilutions of the insecticides. Storing timber over poisoned soil most effective method, surface-treated timber must be stored under covering to prevent chemical washing out. Selective use of chemicals necessary. Data on concentrations and period of protection given.)

1962, pp. 183-184. (India, Dehra Dun, field experiments with surface treatments of timber, soil poisoning, and mud-wall poisoning from 1950-1955 for protection against species of *Odontotermes*. Several chemicals used as surface treatments gave protection for 29 months, the cheapest a three-coat brushing with 0.5 gamma BHC in water suspensional; 10% BHC dust and 1% chlordane gave protection as soil poisons for 26-29 months; in mud-wall poisoning, mixing the chemical with the mud, BHC dust 5% was successful for 28 months, cheap, the huts are reconstructed every year.)

Roorkee, Central Building Research Institute, 1965, pp. 686-687. (India, subterranean termite control measures in building construction, site clearance, mound poisoning, soil poisoning, barriers, concrete foundations, joint fillers.)

Rudakova, A. K., 1962, pp. 88-94. (S.S.R., methods of protection from termites of packing material for wires.)

Rudnev, D. F., 1963, pp. 127-131. (U.S.S.R., Ukraine, *Reticulitermes lucifugus* controlled by proper construction and the use of emulsions of DDT or HCH (benzene hexachloride) as soil poisons; also dipping wood in these emulsions.)

St. George, R. A., Johnston, H. R., and Kowal, R. J., 1963, pp. 1-30. (U.S., recommendations of Forest Service, following BRAB reports. Slightly revised from 1960 edition to include heptachlor as a soil poison.)

Sands, W. A., 1962, pp. 170-192. (West Africa, insecticides as soil and mound poisons against subterranean termites, aldrin or dieldrin mixed with top 6 inches of soil (loamy sand) in field after 33-34 months ⅓ to ⅕ of the insecticide remained in soil originally treated with 0.5, 2, and 5 pounds active ingredient per acre, tested by bioassay

using workers of *Trinervitermes ebenerianus*.

T. ebenerianus very sensitive to dieldrin, general soil treatments might have adverse effects on termite aeration and penetration of water in tropical soils.

Dieldrin emulsion, 1 pound active ingredient per acre, divided among the planting holes per acre (1,225) resulted in a mean survival of 60% 1-year old Eucalyptus trees. Pot grown seedlings similarly treated with emulsion or dust showed low mortality.

Colonies of *Macrotermes natalensis* successfully poisoned with 2½ fluid ounces aldrin 40% emulsifiable concentrate in 6 gallons water applied through three auger holes made into central mound.)

1962a, pp. 1-14. (Nigeria, North Region, termites destructive to trees and crops.)

Sankaran, T., 1962, pp. 233-236. (India, *Microtermes obesi* and *Odontotermes obesus* and a few other species in the latter genus are most commonly encountered in plant protection work. Of the chlorinated hydrocarbons, BHC is the cheapest and most commonly used. Recently heptachlor has been reported as effective and cheaper than aldrin and dieldrin in controlling termites attacking sugarcane where a more expensive insecticide can be afforded. Insecticide applied to soil as dust before sowing BHC or aldrin ½ to 1 pound per acre. The annual loss to agricultural production: grain crops 280 million rupees; wheat 6% to 25%; coconut seedlings 20%; sugar lost in Bihar alone 1,400,000 pounds. Thousands of acres of land under various crops treated every year.)

Sarup, A., 1962, pp. 213-215. (India, subterranean termites account for 95% of damage to buildings and contents, queen killing method control failure, structural alterations, soil and foundation poisoning, wood treatment most effective methods control, prevention during construction best, pipe system soil treatment and retreatment advantageous.)

Saxam, O., 1961, pp. 1-63. (U.S., protecting your home.)

Schmidt, H., 1961, pp. 8-11. (Germany, effect of X-ray on wood-destroying insects.)

Schmutterer, H., 1961, pp. 479-489. (Sudan, *Microtermes thoracalis*, damage to cotton can be prevented by coating seed with a mixture of an insecticide (28.5 g./50% active dieldrin, 46% active aldrin 25% heptachlor or 20% lindane/kg. together with 4 g./kg. of ceresan UT. Treatment with aldrin gave the largest population of plants. Plots treated with lindane had less than one-third the damage control plots had. Peanuts are attacked in the seed and seedling stage. Shelled nuts were coated with 5 g./kg. of active material of dieldrin 50%, aldrin 40%, heptachlor 25%, chlordane 10% and lindane 20%, aldrin treatment gave a high yield.)

Schuler, S., 1964, pp. 124-126, 220, 224. (U.S., damage estimated by Dr. T. E. Snyder, Smithsonian at 250 million dollars annually, latest control methods for subterranean and drywood termites.)

Schwab, R., 1963, pp. 57-58. (South Africa, apply highly penetrating wood preservatives to endangered timber, inject toxic smoke into nest system. Flood soil under suspended subfloors with a 5% solution of copper naphthenate or pentachlorphenol. Adequate ventilation and good established building practice should if necessary be improved.)

Shell Chemical Co., New York, N.Y., 1963, pp. 1-11. (U.S., standard methods for pretreatment and existing structures illustrated.)

Shibamoto, T., 1962, pp. 2-4. (Japan, counter plan for insect attack to wood.)

Siddiqi, Z. A., Rajani, V. G., and Singh, O. P., 1959, pp. 227-232. (India, Uttar Pradesh, *Microtermes obesi*, in 1958 gamma BHC liquid at 0.75 pound per acre gave good protection to sugarcane when applied over setts at time of planting, the crop yield was also boosted.)

Smee, L., 1962, pp. 193-194. (Papua and New Guinea, control of the giant cacao termite (*Neotermes* sp.). Remove dead wood; treat infested wood wtih 0.05% dieldrin in water. Prevent attack to cacao and shade trees by coating pruned areas protectively.)

Smith, B. L., 1965, pp. 40-43-44. (U.S., Midwest, pretreatment soil with poison important. Method used in treating housing project by Chicago firm described and illustrated.)

Smith, D. N., 1964, pp. 1-11. (British Columbia, control of termites *Zootermopsis* and *Reticulitermes* for different types of buildings, both eradicative dusts and liquids and preconstruction soil poisoning, after sanitation and main-

taining a dry state, sound construction and inspection are recommended.)

SMITH, V. K., 1961, p. 60. (Habits and control, how does a chemical barrier stop termites, how long will soil poisons remain effective, many unknowns.)

SMITH, V. K., and JOHNSTON, H. R., 1962, pp. 1-7. (Eastern subterranean termite, U.S. prevention by sound construction, chemical treatment soil.)

SPEAR, P., 1966, p. 80. (U.S., legal value inspection records, should show type of termite, location and extent damage. FHA requires minimum distance 100 feet from well to soil treatment, rodding accepted.)

SRIVASTAVA, A. S., GUPTA, B. P., and AWASTHI, G. P., 1962, pp. 241-242. (India, Uttar Pradesh, *Odontotermes obesus* and *Microtermes obesi* the most common and destructive termites to agricultural crops. Dusting the infested wheat crop with 5% BHC at 25 pounds per acre with only an increase of 2.9% mortality in the plants after a month. For saving crops, nursery plants and fruit trees, dust with 5% aldrin at 20-25 pounds per acre, raking it into the soil. Do not use BHC where it might give flavor to the crop or retard growth. There has been an increase in the number of areas and trees treated since 1955.)

STEINBERG, D. M., 1962, pp. 11-16. (S.S.R., union conference for elaboration of control methods.)

TEOTIA, T. P. S., GUPTA, K. M., RAJANI, V. G., and SAGAR, G., 1963, pp. 203-211. (Uttar Pradesh, India, termite damage to eye buds of sugarcane setts can be controlled by soil treatment with heptachlor sprays 0.5 to 1 pound per acre.)

TRUMAN, L. C., 1962, pp. 27-34. (U.S., correspondence course on control subterranean termites, inspections, reports, treatments for various types construction, equipment, chemicals, pretreatment, illustrated with diagrams.)

1962a, pp. 39-46. (U.S., correspondence course on control nonsubterranean termites, inspection, treatment, fumigation, poison dusts or liquids injected by drilling, prevention silica aerogel dusts. Dampwood, drywood, powder post, and rotten wood termites discussed.)

TSVETKOVA, V. P., 1950, pp. 95-96. (U.S.S.R., fighting termites by building construction, sound foundations, reprints T. E. Snyder's illustrations.)

TURNER, N., 1961, pp. 1-12. (U.S., Connecticut, termites in buildings.)

UTHAISILP, C., 1962a, pp. 493-502. (Thailand, protection and eradication of ground termites, sanitation, pretreatment soil with poisons, proper ventilation and drainage, spray soil before laying concrete slab with coal-tar pitch or rubberoid bitumen, avoid using cellotex and masonite on wooden frames.)

VAN ARK, H., 1961, pp. 46-48. (South Africa, Karoo, control harvester termite *Hodotermes mossambicus.*)

VIECO, H. A., 1962, pp. 1-64. (Colombia, *Heterotermes convexinotatus* feed on roots cotton controlled with heptachlor 1¼ pound technical material per hectare.)

WAGNER, R. E., and EBELING, W., 1964, pp. 24-25. (U.S., California, improvements in equipment for dusting of voids in walls, etc., with Dri-Die to prevent reinfestation drywood termites, use ½-inch hose, plastic carboy as a hopper.)

WEBB, J., 1963, pp. 84, 86, 88. (U.S., Newark, Delaware, TOs, researchers demonstrate control to public, treatment of infested building for termites to show equipment and method necessary for effective control.)

WEIDNER, H., 1962a, pp. 1074-1087. (World, packaging in protection against insects, addition chemicals necessary, must prevent egg laying.)

WEISS, H. B., and CARRUTHERS, R. H., 1937, p. 1-63. (General, books, control by termite-proofing building, or prevent attack, paint lightly on both outside and inside cover and along margins and backs, a solution of 1 ounce of corrosive sublimate, 1 ounce carbolic acid and 2 pints of methylated or white rum spirit. After drying books may be handled with safety. Enough shellac added to the mixture will produce a slightly adhesive liquid. This formula has been used successfully in the West Indies. An extensive bibliography on insect enemies of books is included.)

WILKINSON, W., 1962a, pp. 1-8. (Africa, control of termites by forestry cultural methods.)

1964, pp. 337-339. (Kenya, East Africa, use of insecticides in protection of living trees.)

WRIGHT, N. L., 1962, pp. 48, 50, 52. (U.S., North Carolina, Veterans Administra-

tion since 1957 accepted only inspection forms from state licensed termite control firms, 80% cases submitted to VA are having soil poisoning for termite protection, 5-year warranty required. Dr. Clyde F. Smith, head of N.C. State College Entomology Department, and the N.C. Structural Pest Control Commission helpful in setting up an effective method to control submission of reports.)

Yunus, E. A., 1960, pp. 255-260. (Malaya *Coptotermes curvignathus,* rubber trees, aldrin better than dieldrin in peat soil, inferior in other types soil, clay next to lose toxicity. Relative dosages chlordane, aldrin, dieldrin, 3: 2: 1.)

CYTOLOGY

Banergee, B., 1957, pp. 288-289. (India, *Odontotermes redemanni* haploid chromosome numbers in testis termite king.)

1961, pp. 155-158. (India, *Odontotermes redemanni* chromosome morphology during spermatogenesis.)

1964, p. 445. (India, *Odontotermes redemanni,* cytochemical localization of the enzyme alkaline phosphatase during the early embryogenesis.)

Gabe, M., and Noirot, C., 1961, pp. 376-382. (Describes and figures adipose tissue of royal reproductives of higher African termites and discusses important physiological differences with normal adipose tissue: almost total loss of lipids and glycogene and great abundance of ribonucleic acid and diverse protids. The urate cells are much more rare, etc.)

Gharagozlou, I., 1962, pp. 174-176. (France, cytological and histological studies adipose tissue functional sexuals of *Calotermes flavicollis.*)

Truckenbrodt, W., 1964, pp. 359-434. (Germany, cytological and physiological developmental researches on normal and parthenogenetic egg of *Kalotermes flavicollis.* Maturation, division, and development of the germination procedure, illustrated.)

DAMAGE TO BUILDINGS, MATERIAL

Anonymous, 1961, pp. 1-9. (Italy, damage and control, 1952-1960, list publications.)

1961b, p. 20. (U.S., termites spreading northward in the United States and Europe according to Dr. Thomas E. Snyder, mild winters and advancing civilization causes; losses 250 million dollars annually; pressure impregnated wood will prevent attack.)

1962g, p. 6 (U.S., California, Structural Pest 1st quarterly report on infestation by dampwood, (137) drywood, (18,303) and subterranean (25,424) termites by counties (51) for January, February, and March 1962, due to faulty grade level or earth contacts, 43,864.)

1962i, p. 14. (U.S., Dr. T. E. Snyder estimates yearly damage to homes at about 250 million dollars, compared to 100 million about 15 years ago.)

1962m, pp. 22-23. (U.S., California, Structural Pest 2d quarterly report on infestation by county April, May, and June 1962, 53 counties, due to dampwood termites 267 (0.37%), to drywood 23,846 (33.1%), to subterranean 33,185 (46.1%), total reports 72,000 (including damage by beetles and decay); due to faulty grade level, or earth contacts 26,476 (36.8%), and 22,511 (31.3%) respectively.)

1963d, pp. 16-17. (U.S., California, Structural Pest Board quarterly report on infestation by county October, November, and December 1962, 55 counties. Due to dampwood termites: 302 (0.6%); to drywood: 20,552 (46.7%); to subterranean: 24,664 (56.1%). Total reports 43,953 (including damage by beetles and fungus), due to faulty grade level, or earth contacts: 22,184 (50.4%) and 18,-046 (41.0%) respectively.)

1963h, pp. 49-50, 52, 54, 64. (U.S., faulty drains may cause post-treatment trouble through accumulation of excessive moisture content in soil along a foundation. This may cause leaching of soil poisons. Illustrations are given of an ineffective and an effective drain.)

1963i, pp. 6-7. (U.S., California, Structural Pest Board yearly (1962) report on infestation by county, 57 counties. Total, due to dampwood termites: 997 (0.4%); to drywood: 86,203 (35.7%); to subterranean: 112, 177 (46.5%); grand total (including beetles and fungus): 240,926.

Due to faulty grade level, or earth contacts: 95,358 (39.5%) and 79,077 (32.8%) respectively.)

1963j, pp. 10-11. (U.S., California, Structural Pest Board quarterly report on infestation by county, January, February, and March 1963, 53 counties. Due to dampwood termites: 270 (0.3%); to drywood: 21,559 (31.1%); to subterranean: 31.501 (45.4%). Total reports 69,246 (including beetles and fungus.) Due to faulty grade level, or earth contacts: 26,293 (37.9%) and 21,829 (31.5%) respectively.)

1963l, pp. 22-23. (U.S., California, Structural Pest Board quarterly report on infestation by county, April, May, and June, 1963, 55 counties. Due to dampwood termites: 320 (0.38%); to drywood 26,767 (32.5%); to subterranean: 35,793 (43.5%). Total reports 82,246 (including beetles and fungus.) Due to faulty grade level, or earth contacts; 31,186 (37.9%) and 26,120 (31.7%) respectively.)

1963p, pp. 18-19. (U.S., California, Structural Pest Board 3d quarterly report on infestation by county, July, August, and September, 1963, 53 counties. Due to dampwood termites: 360 (0.4%); to drywood: 26,102 (30.7%); to subterranean: 33,637 (39.5%). Total reports 84,953 (including beetles and fungus.) Due to faulty grade level, or earth contacts; 31,050 (36.5%) and 26,430 (31.1%) respectively.)

1964h, pp. 12-13. (U.S., California, Structural Pest Board 4th quarterly report on infestation by county. October, November, December, 1963, 55 counties. Due to dampwood termites: 382 (.53%); to drywood: 24,012 (33.31%); to subterranean: 29,410 (40.79%). Total reports 72,096 (including beetles and fungus). Due to faulty grade level, or earth contacts: 27,431 (38.05%) and 23,184 (32.16%) respectively.)

1964o, pp. 22-23. (U.S., California, Structural Pest Board quarterly report on infestation by county, January, February, March, 1964, 54 counties. Due to dampwood termites: 296 (.39%); to drywood: 25,634 (34.13%); to subterranean: 32,580 (43.37%). Total reports 75,116 (including beetles and fungus). Due to faulty grade level, or earth contacts: 29,058 (38.68%) and 24,881 (33.12%) respectively.)

1964t, pp. 16-17. (U.S., California, Structural Pest Board 2d quarterly report on infestation by county, April, May, June, 1964, 54 counties. Due to dampwood termites: 297 (.33%); to drywood: 28,124 (31.66%); to subterranean: 37,497 (42.21%). Total reports 88,827 (including beetles and fungus). Due to faulty grade level or earth contacts: 33,356 (37.55%) and 27,838 (31.34%) respectively.)

1964v, p. 3. (U.S., Kansas, Wichita, termites No. 2 school menace in this city of 240,000 population, according to Kànsas City Star. 90 service calls for termite eradication were made at the city's public schools during a month's period. 240 hours were devoted to termite eradication treatments and the work required approximately 11,000 gallons of chemicals.)

1964w, pp. 24-25. (U.S., California, Structural Pest Board annual report on infestation by county 1963. 57 counties. Due to dampwood termites: 1,332 (.5%); to drywood; 98,440 (41.1%); to subterranean: 130,341 (54.4%). Total reports 239,295 (including beetles and fungus). Due to faulty grade level or earth contacts: 115,960 (48.4%) and 97,563 (40.7%) respectively.)

1964y, pp. 16-17. (U.S., California, Structural Pest Board 3d quarterly report on infestation by county, July, August, September, 1964, 55 counties. Due to dampwood termites: 279 (.32%); to drywood: 26,608 (30.66%); to subterranean: 33,021 (38.05%). Total reports 86,784 (including beetles and fungus). Due to faulty grade level or earth contacts 32,284 (37.20%) and 26,652 (30.71%) respectively.)

1964z, p. 3. (U.S., California, summary Structural Pest Board annual report for 1933 on damage to buildings and stating use of chemically preserved lumber would prevent it.)

1965b, pp. 18-19. (U.S., California, Structural Pest Board 4th quarterly report on infestation by county, October, November, December, 1964, 54 counties. Due to dampwood termites: 429 (0.56%); to drywood: 25,577 (33.40%); to subterranean: 30,350 (39.63%). Total reports 76,581 (including beetles and fungus). Due to faulty grade level or earth contacts 29,189 (38.1%) and 24,004 (31.34%) respectively.)

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1965f, pp. 18-19. (U.S., California, Structural Pest Board 1st quarterly report on infestation by county, January, February, March, 1965, 53 counties. Due to dampwood termites: 273 (0.35%); to drywood: 26,489 (33.83%); to subterranean: 32,322 (41.28%). Total reports 78,298 (including beetles and fungus). Due to faulty grade level or earth contacts 29,934 (38.23%) and 25,203 (32.19%) respectively.)

1965i, pp. 18-19. (U.S., California, Structural Pest Board 2d quarterly report on infestation by county, April, May, and June, 1965, 56 counties. Due to dampwood termites: 291 (0.32%); to drywood: 27,762 (30.72%); to subterranean: 37,354 (41.33%). Total reports 90,375 (including beetles and fungus). Due to faulty grade level or earth contacts 33,952 (37.57%) and 28,670 (31.72%) respectively.)

1965j, p. 61. (U.S., infestation report. *Reticulitermes hesperus* in structural beams in fair grounds building Lodi, San Joaquin Co., California, September.)

1966a, p. 46. (U.S., according to Dr. Thomas E. Snyder, termites prefer new houses, because of the juicier and tastier second-growth lumber, to older houses, although most infestations are found in older houses. It often takes 10-15 years for damage to become serious. New homes are centrally heated and built closer to the ground, often over existing colonies in recently forested suburban areas.)

1966e, p. 12. (U.S., California, Structural Pest Board 3d quarterly report on infestation by county, July, August, and September, 1965, 54 counties. Due to dampwood termites: 360 (0.41%); to drywood: 26,872 (30.78%); to subterranean: 33,191 (38.02%). Total reports 87,280 (including beetles and fungus.) Due to faulty grade level or earth contacts 31,942 (36.59%) and 26,912 (30.83%) respectively.)

1966f, p. 64. (U.S., California, Structural Pest Board 4th quarterly report on infestation by county, October, November, and December 1965, 56 counties. Due to dampwood termites: 377 (0.49%); to drywood: 23,649 (30.83%); to subterranean: 29,792 (38.83%). Total reports 76,719 (including beetles and fungus). Due to faulty grade level or earth contacts 28,602 (37.28%) and 24,172 (31.51%) respectively.)

Becker, G., 1962b, pp. 95-109. (Germany, preconditions for damage to plastics by animals including termites described. Attack and deterioration of textiles, packaging material, cable insulations coverings, coats and glues reviewed, bibliography.)

Beesley, J., 1961, pp. 3-4. (Australia, what is the termite hazard?)

Clagg, C. F., 1965, p. 3. (Hawaii, Oahu, Kaneohe, Marine Corps Air Station, *Coptotermes formosanus* damage to insulation of cable caused power failure in the runway lighting system, large branch nest near underground manhole, tubes built up to top concrete manhole and along inside cement-asbestos underground ducts joining manholes through which wiring is drawn extended 150 feet to second adjacent manhole, 20 feet from branch nest a short circuit had burned out insulation. Termites entered through drain at bottom manhole. Thousands workers and soldiers in nest.)

Colwill, D. J., 1964, pp. 393-487. (General, damage to transmission lines and cables.)

Diffidenti, G. A., 1963, pp. 45-54. Africa, biology, habits, damage by termites, *Bellicositermes natalensis* described and figured.)

Dozinskii, V. A., 1962, pp. 84-87. (Ukraine, *Reticulitermes lucifugus* in south are in virgin and long fallow land, migrate into various structures, orchards, vineyards, where more favorable conditions. Damage relatively insignificant.)

Fernando, H. E., 1962, pp. 205-210. (Ceylon, damage to buildings by ground nesting termites more serious than by drywood termites, one cause is use of lime mortar.)

Ghilarov, M. S., 1962a, pp. 131-135. (U.S.S.R., in European portion *Reticulitermes lucifugu.* in the Ukraine in the south which is the northern border of its range, sometimes introduced outside natural range, of no considerable importance. Central Asia, of the two species of *Anacanthotermes, A. turkestanicus* damages buildings in settlements, whereas *ahngerianus* inhabits more arid areas.)

Herfs, A., 1954, pp. 1-37. (Economic importance of termites in tropical countries, pests wood, textiles.)

Internal Revenue Service, 1963. (U.S., Revenue Ruling 63-232 Nov. 12. A loss resulting from damage to property

caused by termites does not constitute a casualty loss within the meaning of 165(c)(3) of the Internal Revenue Code of 1954. Revenue Ruling 59-277, C.B. 1959-2,73 revoked. The new ruling is not retroactive. Any tax deduction after Nov. 12, 1963, will have to be proved a casualty loss in court. Leading authorities on termites have concluded that damage cannot be inflicted with the suddenness caused by fire, storm, etc.)

KALSHOVEN, L. G. E., 1962, pp. 121-137. (Java, *Coptotermes havilandi,* attack material stored in godown in Surabaya, newspapers in house, Gedangan, roof of building, Djakarta, houses, Bogor, timber in yard, woodwork of small tanker.)

1963, pp. 30-31. (West New Guinea, *Coptotermes hyaloapex* penetration into an underground cable, termite later proved to be *elisae* Desn.)

1963c, pp. 223-229. (Indonesia, *Coptotermes curvignathus* gnaws into underground electric cables and other apparatus used in the jungle, attacking at a weak spot particularly in the joints. Soft material like asphaltum and lead are pierced, but not eaten. Iron bands eroded by *Coptotermes* sp. Bogor.)

KIRBY, J. L., 1961, pp. 69-71. (Termites rank No. 2 with P.C.O.s in New Jersey.)

KRAUSS, N. L. H., 1965, pp. 2-4. (Hawaii, Oahu, damage to insulation of cables at Marine Corps Air Sta., Jan. 1964 by *Coptotermes formosanus.*)

KURIR, A., 1962, pp. 1-8. (*Reticulitermes flavipes;* damage to wood and materials by this subterranean termite.)

KUSHWAHA, K. S., 1964, pp. 105-107. (India, infestation by termites around Udaipur, Rajasthan.)

LANGENDORF, G., 1961, pp. 158-159. (Southern Europe, *Calotermes flavicollis, Reticulitermes lucifugus* and *R. flavipes* injurious to wood, lumber.)

LOSINSKY, W. A., 1962, pp. 84-87. (Ukraine, termites injurious to wood and plants.)

MORRIS, W. J., 1963, pp. 44, 46. (U.S., Kent, Ohio, an addition to infested house infested from soil beneath addition, from May 9 to June 20 termites had built tubes up over concrete block foundation, 35 days after ground broken.)

NASH, L. M., 1964, pp. 94-96. (U.S., habits and damage, rarely bring a house crashing down, know when to leave, 90% damage done by subterranean kind, 200 million dollars annual loss.)

PAYNE, J. A., and CROSSLEY, D. A., JR., 1966, p. 44. (U.S., Oak Ridge, Tennessee, *Reticulitermes virginicus* and *R.* sp. in dry pig carrion.)

PROTA, R., 1962, pp. 1-35. (Sardinia, *Reticulitermes lucifugus* infestation very extensive in towns and villages as well as farming areas in the country, particularly in populated districts, in other areas railway sleepers, swarm in spring and autumn)

REINIGER, C. H., 1953, pp. 21-22. (Brazil termites which attack buildings and furniture.)

RESCIA, G., and BONAVENTURA, G., 1961, p. 260. (Italy, new foci of termite infestation.)

RICCI, P., 1961, pp. 260-262. (Italy, a new termite focus of infestation in the Ministry of Public Instruction.)

1961a, pp. 262-263. (Italy, termite infestation in the Oratorio del Caravita.)

ROONWAL, M. L., and CHHOTANI, O. B., 1961, pp. 89-96. (India, about 170 species of termites known from Indian region: Ceylon, Burma, Pakistan and Nepal, 42 species wood-inhabiting, 9 species do not inhabit wood, but destroy it. Species listed, particulars given about most important species.)

RUDNEV, D. F., 1963, pp. 127-131. (U.S.S.R., *Reticulitermes lucifugus* has been in the Ukraine for 100 years. It damages from one to four buildings in each village, a few so badly they had to be rebuilt. Recently, outside its natural range, it has become established in the vicinity of Odessa, Nikolajew, and Cherson, where vineyards also have been injured. To some extent living trees are infested. Proper construction and the use of emulsions of DDT or HCH (BHC) as soil poisons are advisable. Also dipping wood in these emulsions is recommended.)

SAMPAIO, E. J. F., 1960, pp. 1-8. (Portugal, pp. 1-2, damage to books by *Reticulitermes lucifugus,* live inside wood, use books as food, which they reach through passage galleries.)

SCHWAB, R., 1963, pp. 57-58. (South Africa, damage to dwellings most every unprotected house in Provinces of Transvaal and Natal will be attacked once and many repeatedly by subterranean termites. South African termites which attack buildings are drywood type, sub-

terranean or carton nest builders, small and large fungus growers.)

Snyder, T. E., and Francia, F. C., 1962, pp. 63-77. (Philippines, the drywood termites *Cryptotermes cyanocephalus* and *C. dudleyi* are of great economic importance because of their damage to the woodwork of buildings and wood products, furniture and lumber. Also infesting buildings is *Heterotermes philippinensis*. However *Coptotermes flavicephalus* and *C. vastator* are by far the most destructive of the subterranean termites. Species of *Microcerotermes* occasionally attack the woodwork of buildings as does the mound-building *Macrotermes gilvus*.)

Giordani-Soika, A., 1963, pp. 42-46. (Italy, Venice, *Calotermes flavicollis* nests in stakes fixed at bottom of the Laguna as indicators of navigable channels or as anchorage of boats, since the wood is damp enough and they seem undisturbed by salinity. *Reticulitermes lucifugus*, more than once accidentally imported into Venice, has remained, till now, very localized, or even disappeared, probably because of the high dampness of the soil, often submerged by high water.)

Sweeney, R. C. H., 1961, p. 42. (South Africa, termite damage to stored products.)

Sweetman, H. L., 1965, pp. 1-137. (U.S., damage by 15 domestic termite species and several other important families.)

Theden, G., and Becker, G., 1961, pp. 376-409. (Germany, testing and effectiveness of materials against organisms, including termites, in the laboratory, wood, plastics, etc., summary of results by others, bibliography.)

U.S. Dept. Agriculture, Plant Pest Control Div., Coop. Econ. Insect. Rep., 1962, p. 47. (Afghanistan, *Microcerotermes* sp. damaged roof timbers mud houses, Helmand Valley; cardboard boxes medical supplies, storeroom Lashkah Gah.)

1962b, p. 1063. (U.S., California, injury by termites to fruit and shade trees increased in past few years, now considered sources of structural infestations.)

1962f, p. 125a. (U.S., Ohio, Loudonville, Knox County, *Reticulitermes flavipes*, discarded paper sacks perforated in house.)

1963a, p. 82. (Ethiopia, Addis Ababa, *Odontotermes* sp. infesting a house.)

1963c, p. 310. (U.S., California, 240,962 inspections made in state in 1962, 64,307 infestations by termites found.)

1964, p. 150. (Hawaii, Oahu, Kaneohe, *Coptotermes formosanus* damaged insulation electrical cable Marine Corps Air Sta. leading to short circuit. Large branch nest, tubes. Main colony 250 feet distant. Thousands soldiers, workers. First reported damage in Kaneohe in 1953.) (Clagg.)

1964l, p. 1242. (U.S., Arizona, Yuma County, *Heterotermes aureus* infested public building.)

1965a, pp. 326-327. (U.S., termites were considered the most important structural pests in Indiana, Missouri, Arkansas, Alabama, Maryland, and Connecticut, in 1964. Western drywood termite (*Incisitermes minor*) and western subterranean termite *Reticulitermes hesperus* were extremely damaging to residences and other structures in California in 1964. *R. hesperus* caused heavy damage to the foundation of a house near Friday Harbor, San Juan County, Washington. Reports of damage by this species from all areas of Wyoming were received about as often as in 1963. A desert dampwood termite *Paraneotermes simplicornis* occurred in wood under a home in East Las Vegas, Clark County, Nevada, and swarms of adults were numerous in homes in that county. Infestations of subterranean termites (*Reticulitermes* sp.) in Nevada homes above 1963 level and equal to 1962 level. In Iron County, Utah, a few houses were found to be infested at Cedar City and elsewhere during the summer. In Kansas about 6,200 buildings were treated, a slight increase over previous years. Winged forms of *Reticulitermes flavipes* were reported in northwestern Arkansas on March 28; in all sections of North Carolina from February through May, with one swarm from Orange County on August 29. Large swarms were noted in New Castle County, Delaware, from mid-March through April and new infestations in houses rather numerous. In New Jersey swarms were more widespread than in 1963. The first winged forms were reported from Saunderstown, Washington County, Rhode Island, on February 18 with reports common through mid-May.)

1965c, p. 347. (U.S., Connecticut, swarming at Warehouse Point, Hartford County; Groton, New London County; and Wethersfield, Hartford County, April 7, 1965. New Jersey: swarms continue to be homeowners' primary insect concern. Delaware: *Reticulitermes flavipes* adult flights indicate several new house infestations in New Castle County.)

1965d, p. 388. (U.S. Massachusetts, in western section swarms causing increasing number inquiries from homeowners. Connecticut *R. flavipes* swarming statewide. New York termites frequent problem in Nassau County for past few weeks (April 16). New Jersey swarms in many areas. Maryland swarms continue at high rate in central and southern sections of state. North Carolina *R. flavipes* swarming in Wake and Guilford Counties. Ohio, *R. flavipes* swarms in Cincinatti, Hamilton County and in Wayne and Wyandot Counties. Utah *R. hesperus* infesting several homes in the Garland-Tremonton area of Box Elder County. Idaho, *R. hesperus* flight at Homedale, Owyhee County, home infested at Orofino, Clearwater County. Washington, *R. hesperus* winged adults near Endicott, Whitman County.)

1965f, p. 456. (U.S., (week April 30), Maryland swarms *Reticulitermes* spp. in Anne Arundel and Prince Georges Counties and Baltimore. *R. virginicus* swarmed in home about April 27 in Cleveland County, North Carolina. *R. hesperus* heavy in three adjacent new homes in Reno, Washoe County, Nevada. California, winged forms, principally *R. hesperus,* quite prevalent.)

1965g, p. 490 (U.S., (week ending May 7). Rhode Island, first alates *Reticulitermes flavipes* on January 19, common since mid-March in all parts of state; Ohio swarming in Franklin and Hamilton Counties. Oklahoma *R. virginicus* swarming in several locations in Payne, Noble, and Kay Counties. Idaho home infested *R. hesperus,* Orofino, Clearwater County, alates on May 4, Challis, Custer County.)

1965h, p. 519. (U.S., (week ending May 14). Ohio *Reticulitermes flavipes* winged from Franklin and Morrow Counties indicate continued swarming in central area. Rhode Island reports and specimens continue. *Reticulitermes hesperus* California infestation in bath area in Lafayette, Contra Costa County; Hollister, San Benito County; Sacramento, Sacramento County; Idaho, infestation in Blackfoot, Bingham County.

1965i, p. 555. (U.S., (week ending May 21.) Connecticut, *Reticulitermes* sp. still swarming statewide. *Reticulitermes hesperus* swarming in southern Washoe County, Nevada; treatments on increase in Reno-Sparks, Washoe County, and in Lake Tahoe area.

1965j, p. 586. (U.S., (week ending May 28), Michigan, *Reticulitermes* sp. swarming in Freeport, Barry County, May 16. Utah, in homes of Ogden area, Weber County.)

1965k, p. 657. (U.S., (week ending June 11), Maryland, *Reticulitermes virginicus* swarmed on numerous properties in Prince Georges County, more than normal number reports. Nevada, *Paraneotermes simplicicornis* heavy infestation floor home Las Vegas, Clark County, heavy damage. Nebraska, *Reticulitermes* sp. house infestations Lincoln County.)

1965m, p. 732. (U.S., (week ending June 25), North Carolina, *Reticulitermes virginicus* swarmed June 16 in Guilford County. New Hampshire, *R. flavipes* active in basement of home, Durham.)

1965q, p. 901. (Hawaii, Honolulu, *Incisitermes immigrans* (week ending July 30) caused considerable damage to bathroom floor, a rare case of infestation in a home of this lowland tree species.)

1965s, p. 944. (South Dakota, near Tyndall, Bon Homme County *Reticulitermes* sp. damaged slab-foundation home.)

1965t, p. 981. (California, Anaheim, Orange County, *Reticulitermes tibialis* damaged arch in home.)

1965v, p. 1015. (Minnesota, Windom, infestation in building, week ending August 20. Nebraska, Lincoln, Lancaster County, *Reticulitermes* spp. infesting several buildings.)

1965w, p. 1050. (Utah, Logan, *Reticulitermes hesperus* infesting buildings on campus Utah State Univ. and large school building. Wisconsin, La Crosse County, *Reticulitermes flavipes* first report of activity in large degree this season. Week ending August 27.)

1965y, p. 1080. (Wisconsin, Monroe County, Tomah, (week ending September 3), *Reticulitermes flavipes* in building, new county record.)

1965z, p. 1081. (Oregon, *Zootermopsis angusticollis* (week ending September 3), causing usual concern to home owners in western section; heavy flights from coast and many mid-Willamette Valley towns.)

1965a[1], p. 1081. (Texas, Cooke County, *Reticulitermes virginicus* (week ending September 3), heavy damage to stored cotton clothing in warehouses.)

1965b[1], p. 1105. (Wyoming, Casper, (week ending September 10), *Reticulitermes* infested Natrona County Hospital. Utah, Sandy, Salt Lake County *R. hesperus* infested home.)

1965f[1], p. 1248. (Oklahoma, Oklahoma, Payne and Tulsa Counties, (week ending October 29), *Reticulitermes virginicus* continue swarming in some areas.)

1965i[1], p. 1346. (California, Eureka, Humboldt County (week ending December 24), *Reticulitermes hesperus* heavy infestation in city center building.)

1965j[1], p. 1346. (Oregon, Coos County (week ending December 24), *Reticulitermes tibialis* infesting trailer house.)

1966, p. 18. (Alabama, Auburn, Lee County, *Reticulitermes flavipes* (week ending Jan. 7), swarms from three homes during past 10 days; temperatures springlike for over 15 days; Maryland, Baltimore infesting new home.)

1966b, p. 68. (Oklahoma, Tulsa, Tulsa County, *Reticulitermes tibialis* swarming in basement, week ending Jan. 28.)

1966c, p. 75. (Hawaii, Oahu, *Coptotermes formosanus* and *Cryptotermes brevis* continue to cause considerable losses to many home owners; on Maui free of *C. formosanus* prior to 1966, eradication underway in Wailuku and Waikapu; *Zootermopsis angusticollis* in Douglas fir lumber introduced into Hilo, Hawaii and Honolulu, Oahu, week ending Jan. 28.)

1966f, p. 122. (Oklahoma, *Reticulitermes* spp. swarming in several areas of state, week ending Feb. 18.)

1966g, p. 174. (Maryland, Hyattsville, Prince Georges County, *Reticulitermes flavipes* winged emerged inside home, week ending Mar 4.)

1966h, p. 202. (New Jersey, *Reticulitermes* sp. winged forms active in many areas, week ending Mar. 11. Delaware, *Reticulitermes flavipes* first swarms in New Castle County first week March. Maryland, Hyattsville, Prince Georges County, *R. flavipes* swarming on several properties, week ending Mar. 11. Virginia, *Reticulitermes* sp. adults collected in home in Sussex, Sussex County, week ending Mar. 11. North Carolina, *R. flavipes* swarmed in large number March 4 in Wake County, first swarm of season. Nevada, Reno, Washoe County, *R. hesperus* swarming in large numbers in office; week ending Mar. 11.)

1966j, p. 223. (Maryland *Reticulitermes flavipes* swarming inside buildings statewide, week ending Mar. 18. Colorado, Cortez area, Montezuma County, *R. tibialis* swarming, week ending Mar. 18. *Reticulitermes* sp. swarming in Larimer County.)

1966l, pp. 246-247. (Alabama, Henry County, week ending March 25, *Reticulitermes flavipes,* first swarming from decaying tree. Maryland, swarming in homes Montgomery and Prince Georges Counties. Pennsylvania, swarming in Centre County. Connecticut, swarming in homes in Plantsville, Hamden, Windsor, New Haven, Somers, Bridgeport, and Fairfield, mostly last full week of March. South Dakota, *Reticulitermes* sp., week ending March 25, flight near home in White River, Mellette County.)

1966m, p. 286. (Hawaii, Honolulu, Oahu, *Coptotermes formosanus* first swarms of year in Manoa area, March 14.)

1966n, p. 311. (U.S., Maryland, week ending April 8, *Reticulitermes flavipes* swarmed inside and about houses in Prince Georges County. Ohio, peak swarming activity occurred mid- to late-February in southern half of state, persisted about 2 weeks, unusual early swarming. Utah, *R. hesperus* present in home in Salina, Sevier County, week ending April 8, pp. 325-326, summary termite activity 1965.)

1966o, p. 342. (U.S., Connecticut, *R. flavipes,* April 13, 1966, swarming in East Haven, Branford, North Haven, Hamden, New Haven, West Haven, Bridgeport, and Thompsonville. Illinois, week ending April 15, 1966, *R. flavipes* swarming in Champaign-Urbana area. Texas, week ending April 15, 1966, *R. flavipes* swarming from house in Bay City, Matagorda County, house in Floresville, Wilson County, and several houses in Seguin, Guadalupe, County.)

1966p, p. 394. (U.S., Massachusetts, *Reticulitermes* sp., April 30, swarming near peak in eastern area. Alabama,

week ending April 29, *Reticulitermes flavipes* causing considerable damage to two farm barns in Clay County, and to home in Lee County. Nevada, *R. tibialis* medium infestation in home in Winnemucca, Humboldt County, week ending April 29; *Reticulitermes* sp. swarmed in Reno-Sparks area April 23-24, medium infestation home Reno, Washoe County. California, *R. hesperus* heavy infestations in air terminal building in El Toro, Orange County, Sacramento, Sacramento County, Atascadero, San Luis Obispo County, and Gilroy, Santa Clara County, week ending April 29.)

1966q, p. 417, week ending May 6, *R. flavipes* serious problem in Guilford County, North Carolina to school system, of 42 schools half with spot infestations.)

DAMAGE TO LIVING VEGETATION

Ardley, J. H., Clifford, L. T., and Gay, F. J., 1965, pp. 680-681. (New Guinea, *Coptotermes elisae* damage to plantation-grown hoop pine (*Araucaria cunninghamii*) grown for plywood. Infestation associated with rotting stumps. By 1963 infestation reached 7.2%. Treatment of infested trees by injecting 0.03% dieldrin emulsion; residual colonies destroyed by injecting arsenical dusts into galleries.)

Bernard, J., 1964, pp. 83-85. (Tunis, agriculture.)

Bindra, O .S., 1961, pp. 277-282. (India, North West Madhya Pradesh, injury to crops, young orchard plants, by *Odontotermes, Microtermes, Trinervitermes, Nasutitermes* and *Coptotermes.*)

Brunck, F., 1962, pp. 20-22. (Tropical Africa, 10 species termites in various genera pests of forest plantations in French-speaking states.)

Butani, D. K., 1961, pp. 767-768. (India, Bihar, damage to sugarcane.)

Cabral, J. de S. M. N., 1959, pp. 28-29. (Portugal, *Reticulitermes lucifugus* attacking trunks *Pinus pinaster.*)

Castel-Branco, A. J. F., 1963, pp. 17-94. (Africa, Island S. Thomé nine species of Isoptera noted as pests of cacao.)

Chatterjee, P. N., and Thakur, M. L., 1963, pp. 635-637. (India, *Sarvaritermes faveolus* as pest *Alnus nitida* in Kulu valley, Punjab, attacks aged trees and partially dead parts, swarms in laboratory during monsoon in July.)

Chhotani, O. B., 1963, pp. 287-288. (India, interior, *Cryptotermes havilandi,* distribution, injury to *Ficus bengalensis.*)

Conroy, W. L., 1963, pp. 85, 86. (New Guinea, *Neotermes,* in New Ireland restricted to cacao in vicinity Lakuramau Plantation. Control of this ground-entering termite unsuccessful. Except in New Ireland and New Britain damage to cacao by termites not significant. In Gazelle Peninsula, *Neotermes* was beginning to cause widespread damage although entry through the root system was still not commonly encountered. Damage by termites is largely a matter of faulty plantation management, remove *Leucaena* stumps, proper pruning. Introduce 0.5% solution dieldrin in downward sloping gallery, for largest colony 150 cc., p. 85. In pine plantations *Coptotermes* sp. caused increasing damage at Bulolo and Wau, p. 86.)

Cruz, B. P. B., Figueiredo, M. B., Almeida, E., 1962, pp. 189-195. (Brazil, São Paulo, *Syntermes* sp. damages roots ground nuts.)

Cumber, R. A., and Eyles, A. C., 1961, pp. 426-440. (New Zealand, North Island, (1) one Isoptera damaging major fodder crop, p. 429 *Kalotermes brouni* in turnips.)

Das, G. M., 1962, pp. 229-231. (North-East India, live-wood-eating termites *Microcerotermes* spp. cause damage of a permanent nature to tea and the ultimate death of the bushes, at least 15% of the crop is lost annually. Scavenging termite *Odontotermes* spp. may also occasionally cause severe damage to individual bushes after a long period. Attack is made through the heartwood, and the destruction of the frame is rapid in the case of live-wood-eating termites. From 50% to 100% of the bushes in Darrang and Cachar districts may be more or less seriously affected in most gardens.)

1963, pp. 4-8. (India, termites as important pests of tea.)

David, A. L., Kalyanaraman, V. M., and Narayanaswamy, P. S., 1964, p. 369. (India, Madras, *Odontotermes obesus* damage to sugarcane, notes on locality and infestation.)

Dourojeanni Ricordi, M., 1965, p. 29. (Peru, termites that affect the exploitation of the forests of Peru.)

Dutt, N., 1962, pp. 217-218. (India, *Microtermes obesi* injures jute since 1954, enters stem thorugh tap roots, feeds on stem reducing fiber yield, carry earth into plant.)

Fernando, H. E., 1962, pp. 205-210. (Ceylon, *Neotermes militaris, N. greeni* and *Glyptotermes dilatatus* attack tea and rubber plants, shade and forest trees; *Coptotermes ceylonicus* rarely damages tea but usually rubber and forest trees, but *Neotermes* and *Glyptotermes* are considered to be among the major tea pests.)

Forsyth, J., 1966, pp. 76-78. (Ghana, list of termites attacking crops, notes on hosts, 1910-1960.)

Gentry, J. W., 1965, pp. 8-9. (Iran, Iraq, roots, stems, field crops damaged by *Amitermes vilis.* Sudan, crops damaged by *Macrotermes herus.* West Pakistan, India, *Microtermes obesi* attacks roots, crops, houses. Pakistan, India, *Odontotermes obesus* damages crops.)

Given, B. B., 1964, pp. 25-26. (Cook Islands, *Calotermes* (*Neotermes*) *rainbowi* first recorded infesting coconut tree trunks about 1904 on Anchorage Isld. In 1941 three-fourths of the palms were infested and palms were collapsing. A full scale attack on the present areas of infestation was recommended in 1960, after describing the manner of infestation.)

Greaves, T., 1961. Termites in forest trees, p. 39. *In* Commonwealth Sci. and Indus. Res. Org., Div. Ent. 1960-1961 Ann. Rept. (Australia, studies incipient colonies *Porotermes adamsoni,* gallery studies *Coptotermes acinaciformis* have been continued. Studies of the area covered by individual colonies of termites have shown that trees can be attacked from a central colony in a tree over 100 feet away.)

1962, pp. 1-17. (Australia, studies were conducted to determine the comparative losses caused to felled Eucalyptus trees by termites, decay and fire, the percentages charged to termites varied from 45% to 95%.)

1962a, p. 65. (Australia, N.S.W., Bago State Forest, *Porotermes adamsoni,* alpine ash, losses up to 14.15 pounds per acre. Little loss occurs in logs 5 feet in girth, if harvested under 7 feet and protected from fire would be practically free from attack.)

1962c, pp. 630-651. (Australia, *Coptotermes acinaciformis* foraging galleries radiate from colonies in trees in coastal forests eastern Australia. In living tree central "pipe" eaten out filled with "mud gut" material, 15 living trees attacked from central colony, maximum length gallery 156 feet. In Western Australia after host trees have been eaten out colonies can persist in mounds. *Coptotermes brunneus,* in the Murchison River Basin, Western Australia, mound colonies occur in sclerophyll woodland and mallee. Foraging galleries, longest 150 feet, traced to Eucalyptus, adjacent sand impregnated with cementing substance. In both termites invasion of trees through living bark of a root or base of tree trunk. This is in contrast to entry of colony-founding pairs which can only enter through a tree injury.)

1963, pp. 74-76. (Australia, eastern Queensland, *Coptotermes acinaciformis* study showed possible relation of termite attack on tree to soil type.)

1964, pp. 1-4. (Australia, *Coptotermes acinaciformis, C. frenchi,* and *Porotermes adamsoni* are the major termite forest pests. In the tropical north *Mastotermes darwiniensis,* in the absence of hardwood forest, must be included because of exotic trees. Methods of attack varies with species termite. Fire scars main source of entry.)

1965, p. 46. (Australia, N.S.W., 300-400 year old blackbutt trees, termites caused 83%-95% loss; total losses by termites, decay and fire varied from 57-65 pounds per acre.)

Greaves, T., McInnes, R. S., and Dowse, J. E., 1965, pp. 161-174. (Australia, Bago State Forest, N.S.W., losses in alpine forest trees 60-150 years old by *Porotermes adamsoni* were 80% of the damage, greater than that caused by decay 13%-36% and fire less than 5%.)

Guagliumi, P., 1962, pp. 405-409. (Venezuela, *Heterotermes crinitus* and *Nasutitermes* sp. pests sugarcane.)

Gupta, R., and Agarwal, M. K., 1963, pp. 285-287. (India, *Odontotermes obesus* as a pest of Japanese mint.)

Hall, D. W., 1956, p. 106. (East Africa, damage to ground nuts before and after harvest.)

HARRIS, W. V., 1961, pp. 1-187. (Tropical Africa, damage to agricultural crops, forest trees.)

1962a, pp. 1-5. (General, termite control in afforestation can be obtained with 8 ounces of dieldrin per acre but might have serious consequences on the role of termites on soil fertility; damage to mature trees by species of *Coptotermes* in Australia, British Honduras, and south-east Asia occurs and by drywood termites in Java, Dominican Republic and East Africa. There is need for faunal surveys so that protection may be given from the more destructive termites until the transplants have outgrown the susceptible stage. The species of termites to which resistant or treated woods are exposed in tests should be listed to explain anomalous results in different areas.)

1963b, pp. 193-201. (106 species phytophagous Isoptera in six families feed on cultivated trees and crops, list principal species given, methods feeding, and geographical distribution. Comparison made between termites feeding on tree crop-cocoa and field crop-sugarcane.)

HERFS, A., 1954, pp. 1-37 (Tropics, plants.)

HUSSAIN, A. A., 1963, pp. 345-348. (Iraq, borers on date palms including *Microcerotermes diversus,* seasonal incidence and damage described.)

INDIAN COCONUT JOURNAL, 1962, pp. 165-166. (Isoptera South East Asia and Pacific region host list.)

INDIAN INST. SUGARCANE RES., SUGARCANE BREEDING, 1962, p. 186. (India, termite control for sugarcane.)

1962a, p. 190. (India, agricultural entomology, Isoptera.)

KALSHOVEN, L. G. E., 1962, pp. 121-137. (Java, *Coptotermes havilandi,* damage to forest trees, Leguminosae preferred, *Acacia tomentosa,* and other legumes grow spontaneously in the largely uniform teak plantations, this termite rarely attacks teak, is selective in choice of host trees. Often nest in old dead trunks and stumps.)

1963a, pp. 90-99. (Indonesia and Malaya, *Coptotermes curvignathus* causing death trees, host trees and susceptibility to attack. Monocotyls as hosts; Java, Sumatra, Borneo.)

KAPUR, A. P., 1962, pp. 105-106. (India, Shillong, Assam, *Reticulitermes chinensis* injury to roots *Pinus longifolia* in forest.)

KRISHNAMOORTHY, C., and RAMASUBBIAH, K., 1962, pp. 243-245. (India, Andhra Pradesh, *Microtermes obesi* and *Odontotermes obesus* are the principal termites damaging cultivated crops, the former wheat, the latter sugarcane, fruit plants and coconut.)

KUSHWAHA, K. S., 1961, pp. 229-230. (India, Rajasthan, sugarcane crop.)

1964a, pp. 107-108. (Idem.)

MATHEN, K., KURIAN, C., and MATHEW, J., 1964, pp. 127-136. (India, *Odontotermes obesus,* field control infesting germinating nuts in coconut nursery.)

MATHUR, R. N., and SINGH, B., 1960, pp. 32, 34, 37, 41, 57, 73, 91, 110, 119, 136. (India, and adjacent countries, termites injurious to forest plants.)

1960a, pp. 27, 30, 34, 41, 47, 70, 75, 83, 105, 111. India, and adjacent countries, termites injurious to forest plants.)

1961, pp. 3, 6, 9, 14, 17, 21, 30, 33, 47, 57, 65, 72, 83, 85. (India, and adjacent countries, termites injurious to forest plants.)

1961a, pp. 15-16, 35, 49, 92, 97, 106. (India, and adjacent countries, termites injurious to forest plants.)

MENDES, M. A., 1959, pp. 136-137. (Portugal, *Reticulitermes lucifugus* attacking *Castanea sativa.*)

MENON, K. R. V., and PANDALAI, K. M., 1958, p. 282. (India, *Odontotermes obesus* injury to coconut palm, control.)

MINKO, G., 1965, pp. 1-3. (Australia, Victoria, *Porotermes adamsoni* in living *Pinus radiata.*)

NEL, J. J. C., 1964, pp. 104-110. (South Africa, Orange Free State, *Hodotermes mossambicus* damage to veldt.)

PEMBERTON, C. E., 1961, p. 197. Abstr., stalk borers sugarcane: Isoptera *Heterotermes philippinensis* Light Philippines; *Mastotermes darwiniensis* Frogg Queensland; *Termes meridionalis* Frogg; *Macrotermes gilvus* Hag. Philippines, Java; *Capritermes nitobei* Shir. Formosa; *Odontotermes formosanus* Shir. Formosa; *Reticulitermes speratus* Shir. Formosa.)

PROTA, R., 1962, pp. 1-35. (Sardinia, *Kalotermes flavicollis* greatest damage done in vineyards and woody parts cork trees; in southern part of the island swarm toward end of Sept.; occur up to 3350 feet.)

RANAWEERA, J. W., 1962, pp. 88-103. (Ceylon tea estates, genera, and species termites injurious to living plants, habits, types damage. Some scavengers become pests

when their galleries interfere with nutrition or wound healing of tea bushes. *Neotermes militaris* can be controlled by forcing dieldrin or chlordane emulsion at 10 pounds pressure into galleries opened by pruning, 2 pints per bush. Keys given for determination most important termites.)

RAO, D. S., 1958, pp. 200-201. (India, Mysore, potato crop in soil, termites eat potato pieces, cutting germination.)

REDDY, D. B., 1962, pp. 225-227. (India practically every important agricultural crop is attacked by termites at all stages of growth. Only eight species are important: *Odontotermes obesus, O. assmuthi, O. feae, Microtermes obesi, Trinervitermes heimi, Coptotermes heimi, Heterotermes indicola* and *Neotermes gardneri*. In 1912 the annual loss to grain crops was 18 million rupees. *Microtermes obesi* causes an annual loss of 6% and occasionally 25% to germinating wheat.)

REISCH, J., 1961, pp. 113-117. (East Africa, Kenya, forest pests.)

ROSE, D. J. W., 1963. (Rhodesias, pests of maize and other cultivated crops.)

SEMEDO, C. M. B., 1961, p. 101. (Portugal, *Leucotermes* (*Reticulitermes*) *lucifugus* injury to elm trees.)

SEN-SARMA, P. K., and MATHUR, R. N., 1961, p. 252. (South India, *Trinervitermes biformis*, damage to plants.)

SHARMA, R. C., 1964, pp. 28-30. (India, Ajmer, Rajasthan, *Odontotermes obesus* damaging sorghum.)

SMEE, L., 1963, pp. 1-19. (Papua and New Guinea, two species of *Neotermes;* one in New Britain attacks through dead wood in aerial parts tree, one in New Ireland through roots.

1964, p. 27. (Papua and New Guinea, *Coptotermes elisae* attacking live tissue *Hevea brasiliensis* trees, control.)

SNYDER, T. E., and FRANCIA, F. C., 1962, pp. 63-77. (Philippines, *Kalotermes mcgregori* and *K. taylori* attack the living forest tree ipil-ipil (*Leucaena glauca*); species of *Neotermes* infest ipil-ipil, shade trees including avocado, cacao, and guava.)

SZENT-IVANY, J. J. H., 1961, pp. 127-147. (Papua and New Guinea damage to cacao by *Calotermes papua* and *Microcerotermes biroi*.)

1963, pp. 37-43. (Papua and New Guinea, *Nasutitermes princeps* (Desneux) Matupi Plantation, Madang District makes primary attack on healthy cacao trees.)

TEOTIA, T. P. S., GUPTA, K. M., RAJANI, V. G., and SAGAR, G., 1963, pp. 203-211. (Uttar Pradesh, India during hot weather termites destroy 30%-60% eye buds cane setts.)

TEOTIA, T. P. S., RAJANI, V. G., and SAGAR, G., 1963, pp. 33-38. (India, Uttar Pradesh, treatment of the spring-planted sugarcane crop increased the yield, dipping the cane setts was as effective as spraying; 0.1% gamma BHC to control termites.)

THOMAS, A. S., 1962, pp. 103-108. (Termite mounds of tropics have soils differing from those of grasslands in which they are built; some harvester termites destroy areas of pasture and large mounds of fungus-eating termites hinder mechanical cultivation.)

THOMAS, R. T. S., 1962, pp. 57-58. (Dutch New Guinea, attack on trees and live, garden plants, lists, *Coptotermes hyaloapex*.)

TSVETKOVA, V. P., 1963, pp. 28-36. (U.S.S.R., South of Ukraine, *Reticulitermes lucifugus* damage to trees, shrubs, grapevines.)

U.S. DEPT. AGRICULTURE, PLANT PEST CONTROL DIV., COOP. ECON. INSECT REP. 1962, p. 531. (Sudan, Khasim El Ghirba district, *Macrotermes herus* and *Odontotermes sudanensis* serious pests peanuts; p. 54, Sudan, Dongola Merowe district *Odontotermes sudanensis* seriously infested 35% of the date palms.)

1962b, p. 1053. (U.S., California, *Kalotermes minor*, drywood termite heavy in apricot trees in yard, Woodside, San Mateo County, incidences of infestation in fruit and shade trees increased in past few years.)

1963, p. 79-80. (Sudan, *Odontotermes sudanensis* attacked 60% of the date palms in the Dongola-Nile reach, *Microtermes aluco* was reported causing slight damage to cotton in most of the cotton-growing district.)

1963d, p. 533. (Nevada, Pine Creek, Spring Mountains, Clark County, *Incisitermes minor* injuring velvet ash trees.)

1963h, p. 1140. (California, *Reticulitermes hesperus*, western subterranean termite, peach fruit from old orchard found infested in packing shed on three occa-

sions; this was ripe fruit for cutting and drying; most fruit with split pits.)

1963i, p. 1178. (California, Ducas, Tulare County, *Reticulitermes hesperus* heavy on citrus trees, condition of trees not indicated.)

1963l, p. 1264. (Alabama, *Reticulitermes flavipes* present in varying degrees in 55 corn fields in 11 west and southwest counties; 5%-10% of corn stalks completely "hulled" out and falling in some fields, especially in new ground areas and several fields near old home sites. No damage to grain or ears. Downed cornstalks will affect harvest.)

1963m, p. 1368. (Alabama, *Reticulitermes flavipes* in cornstalks in 13 counties in west and northwest areas; also in Clay, Coosa, and Chambers Counties.)

1964d, p. 360. (Florida, *Cryptotermes cavifrons* infested considerable number cabbage palms in Dixie County, in trunks some trees wind breakage followed. *Aeticulitermes* sp. severely damage yew at College Park, Prince Georges County, Md.)

1964g, p. 1131. (Florida, *Kalotermes approximatus* infesting dead wood area in living dogwood tree at Gainesville, Alachua County.)

1964h, p. 1164. (California, Fremont, Alameda County *Reticulitermes hesperus* invaded nursery cans of young citrus trees and girdled plants.)

1964i, p. 1186. (Alabama, *Reticulitermes flavipes* destroying cornstalks in southern parts state to Tennessee Valley, infestations heavier in late corn and smaller fields bordering woods and fence rows. In Lee County several stalks sugarcane destroyed.)

1964j, p. 1190. (Alabama, *Reticulitermes flavipes* destroying mature watermelons in Morgan County.)

1964k, p. 1192. (Florida, *Reticulitermes flavipes* 10% of 5000 peat and peperomia samples severely damaged in nursery at Apopka, Orange County.)

1965, p. 241. (California, Fresno, *Reticulitermes hesperus* damaging rooting grape cuttings.)

1965b, p. 340. (Florida, Fort Lauderdale, Broward County, *Reticulitermes hageni* in areas between bark and apparently healthy wood at ground level upward to 10-12 inches, grapefruit tree, not burrowed.)

1965e, p. 417. (Texas, Montague County, *Gnathamitermes* sp. workers on pasture grasses.)

1965l, p. 655. (North Carolina, *Kalotermes approximatus* infested white oak near Newton Grove, Sampson County, infestation 30 feet above ground.)

1965n, p. 748. (Texas, Motley County, termites damaged large, spotted areas pasture grass in Motley County.)

1965p, p. 884. (Texas, Montague County (week ending July 30), *Amitermes* sp., light local infestations of range grasses.)

1965q, p. 901. (Honolulu, Hawaii, *Incisitermes immigrans* caused considerable damage to bathroom floor, rare case of infestation in a house of this lowland tree species—week ending July 30.)

1965u, p. 1002. (California, Summit City, Shasta County, medium infestation in roots pepper plants, week ending August 20.)

1965x, p. 1078. (Missouri, Callaway County, Fulton area, *Reticulitermes flavipes* infesting chrysanthemums, week ending September 3.)

$1965c^1$, p. 1125. (Delaware, New Castle County, *Reticulitermes flavipes* unusual infestation in stems living geranium plants, week ending September 17.)

$1965d^1$, p. 1184. (Ohio, Darke County, termites unspecified species feeding on sweet corn in garden, week October 8.)

$1965g^1$, p. 1264. (Oklahoma, Grandfield area, Tillman County (week ending Nov. 5) *Gnathamitermes tubiformans* moderate to heavy on grass and dead weeds on roadsides and in pastures.)

$1965h^1$, p. 1265. (North Carolina, Fayetteville, Cumberland County, July 9, *Kalotermes approximatus* in walnut tree.)

1966d, p. 96. (Texas, *Amitermes* sp. pest of small grains oats Madison County, week ending Feb. 4.)

1966i, p. 222. (Indiana, Richmond, Wayne County, *Reticulitermes* sp. workers attacking juniper grafts in greenhouse, week ending Mar. 18.)

1966k, p. 246. (Florida, Gainesville, Alachua County, *Kalotermes approximatus* in branch scars and tree holes laurel oak, mid-March.)

Uthaisilp, C., 1962a, pp. 493-502. (Siam, control ground termites.)

Van Ark, H., 1961, pp. 46-48. (South Africa, Karoo, *Hodotermes mossambicus* damage by harvesting.)

1964, pp. 121-124. (South Africa, *Hodotermes mossambicus, Microhodotermes*

viator and *Trinervitermes* harvesting termites pests of the karoo.)

WEIDNER, H., 1962, pp. 86-93. (Sudan, pests of cotton, coffee, peanuts, wood stakes, *Microtermes thoracalis* most injurious, *Pseudacanthotermes harrisensis* damaged stakes.)

WILKINSON, W., 1965, pp. 669-670. (Damage to living trees falls into two main divisions, colony based on and confined to single tree, restricted range termites; free range termites, forage distance from nests, colony attacks many trees. Former confined to primitive Kalotermitidae and Termopsidae, latter include Mastotermitidae, Hodotermitidae, Rhinotermitidae, and Termitidae. Free range termites in Africa damage both young and old trees in plantations. *Coptotermes* principal attacker grown trees. By far greatest damage to young trees by the Termitidae. Control by destruction nests or by preventing approach, former method uses toxic smoke or fluid, latter by repellents. Treatment young plants in nursery most economical; insecticide mixed in potting soil as dust or watered on young stock as an emulsion. In deep planting field treatment necessary, mix insecticide in hole when planting.)

WILLIAMS, R. M. C., 1965, pp. 675-676. British Honduras, *Coptotermes niger* attacking *Pinus caribaea,* 80% frequency infestation of this highly resinous forest tree in some areas. Brown rot, *Lentinus pallidus,* is present in all cases heartwood infestation; termite infestation wholly secondary. Laboratory tests show scarcely any feeding in sound untreated heartwood, length life in rotton heartwood grossly greater. Greater part of repellence to feeding removed by removal of turpentine fractions.)

1965a, pp. 1-31. (Idem., also general collection of termites from British Honduras and adjacent countries.)

WYNIGER, R., 1962, p. 12, 457-463. (Warm climates, Isoptera injury to crops, termite species listed under crops.)

DETECTION

DEORAS, P. J., 1962, pp. 101-103. (India, Bombay, *Odontotermes* mound-building termites primary colony and queen cell located by magnetic compass, queen parallel to magnetic meridian.)

HARRIS, W. V., 1961a, pp. 228-232. (General, drywood termites can be detected by small holes on surface of wood, closed by a hard plug and pellets of excrement. Subterranean termites build covered runways over surfaces, they use their excrement to seal off galleries. The mound builders bring up soil into their large galleries. 110 different species damage buildings, etc., in various parts of the world, 50 are regular pests.)

SCHERZINGER, B. C., 1962, p. 66. (U.S., subterfuges to cover up signs of infestations by subterranean termites in order to sell buildings. Paint walls and wood, tube will show under one coat paint, cover over damaged wood, etc.)

DIGESTION

RAO, K. P., 1962, pp. 71-72. (India, *Heterotermes indicola,* experiments with freshly collected termites and those with the symbiotic protozoa removed showed that termites possess in the middle and posterior regions of the gut a number of proteolytic enzymes for protein digestion. These enzymes are produced by the gut itself. Cathepsin, however, only present in the freshly collected termites, is produced by the symbionts, where with the protozoa its activity is highest in the anterior part of the gut.)

SEIFERT, K., 1962, pp. 161-168. (Chemical change in the wood cell wall components under the influence of animal and plant damage. The decomposition of the chemical elements of pine heartwood and sapwood during digestion by *Kalotermes flavicollis* was determined analytically after the insects had been kept on wood samples of given composition and weight. So the average feeding capacity and substance loss through respiration could be determined per specimen. Only a small remainder of cellulose, probably combined with lignin is left. The decisive effect on the hydrolysis of polysaccharides of termite protein is discussed. Lignin is decomposed to a smaller extent, in this process protocatechuic aldehyde is produced. Wood

in an early stage of brown rot showed approximately the same degrees of decomposition as sound wood. Analysis of beech wood and termite pellets showed quite similar degradation, with some divergences.)

1963, pp. 85-96. (Chemical parallels in the decomposition of wood substance by organisms, fungi, and *Kalotermes flavicollis.* Chemically, decomposition of wood effected by animals and fungi according to definite laws. Metabolism as follows: participation of carbohydrates takes place within a major range of decomposition, when lignin can be decomposed imperfectly only. Decomposition wood determined by ferment system effective on the lignin. White rot fungi possess such a ferment, brown rot fungi do not. The defensive properties of wood can be detected biologically but not by chemical analysis. The activities of enzymes of wood destroyers react in the same way as the corresponding substrates are concentrated in the wood.)

Yokoe, Y., 1964, pp. 115-120. (Japan, cellulase activity in the termite *Leucotermes speratus,* with new evidence in support of a cellulase produced by the termite itself.)

DISEASES, HUMAN, PLANT, AND TERMITE

Hagley, E. A. C., 1964, pp. 905-906. (Role insects as vectors red ring disease coconut palm in Trinidad.)

DISTRIBUTION

Ahmad, M., 1962, pp. 67-68. (West Pakistan, greater part arid, termite fauna not rich, yet 41 species occur including 8 undescribed. In the families Kalotermitidae, Hodotermitidae and Rhinotermitidae only two species occur in each. The termitid genera include *Odontotermes, Microtermes, Microcerotermes, Eremotermes, Amitermes, Capritermes,* and *Angulitermes.*)

Bashir, N. A., 1963, pp. 48-49. (Punjab, India, list 16 species termites in 10 genera and 4 families, soldiers and imagos measured, described, and drawn. Abstract paper presented at 34th ann. meeting Colo. State Univ., May 3-4, 1963.)

Becker, G., 1962, pp. 143-165. (Collecting notes and observations for India between September and December 1956, habitats and previous records are given, maps show distribution, nests, and damage figured, and the most important economically for buildings are listed; three new species were found, one the first representative of a new genus, have been described by others.)

Beebe, W., 1924, p. 101. (Galapagos Islands, Eden Island, under small bit of lava limited colony of termites, tunnels several inches into soil, no queen, soldiers like workers unusually elongated.)

Bei-Bienko, G. Ya., 1964, pp. 174-176. (European SSSR, Kalotermitidae and Rhinotermitidae.)

Bouillon, A., 1958, pp. 198-209. (Africa, Katanga list of 2 families, 5 subfamilies, 22 genera, 54 species, and 1 subspecies (as of 1956), as comparing with 3 families, 7 subfamilies, 57 genera, 306 species, and 11 subspecies for the Belgian Congo.)

Bouillon, A., Lekie, R., and Mathot, G., 1962, pp. 1-35. (Africa, ecological problem nests *Apicotermes,* in forest, savanna, mobility of the society, horizontal and vertical distribution, influence of different microclimate, distribution species related to types of vegetation, altitude, soil, and the barrier which bounds the flow of the Congo River.)

Bulter, G. D., 1961, p. 381. (Laysan Island, *Cryptotermes brevis.*)

Clagg, C. F., 1965a, p. 15. (Guam, a termite different from *Coptotermes formosanus* and *Prorhinotermes inopinatus* found within 100 yards of edge of Apra Inner Harbor. Nearly 1000 specimens workers, soldiers and a few nymphs found in 2 wooden boxes on ground. Two types soldiers present.)

Coaton, W. G. H., 1962b, pp. 144-156, pls. 1-6, 9-11. (South Africa, Kruger Natl. Park, survey of Isoptera, 330 termite accessions were gained in 1959-1960, in the families Kalotermitidae, Hodotermitidae, Rhinotermitidae, and Termitidae. Of the 32 genera of Isoptera recorded from the Republic of South Africa only 10 have

not been found in Kruger Natl. Park. A new species of *Apicotermes* was collected and the new genus *Fulleritermes* formed of species erroneously in *Coarctotermes* Holmgren, s. lat. Distribution maps for South Africa are appended for *Epicalotermes* Silv., *Bifiditermes* Krish., *Odontotermes* Holmg., *Porotermes* Hag., *Kalotermes* Hag., *Trinervitermes* Holmg., *Apicotermes* Holmg,. *Coarctotermes* Holmg. s. str., and *Fulleritermes* gen. nov.

1963, pp. 38-50. (South Africa, Kalahari thornveld and bushveld, survey of Isoptera. The only mounds encountered in Kalahari Gemsbok Park were constructed by species of *Trinervitermes;* the only other termite with readily visible surface structures were the small peaked dumps of *Hodotermes mossambicus.* Maps show the route traveled, the distribution in the Republic of South Africa of the genera *Hodotermes, Psammotermes, Microcerotermes, Amitermes, Lepidotermes, Cubitermes, Promirotermes, Angulitermes, Allodontermes, Macrotermes, Odontotermes, Microtermes, Trinervitermes,* and *Fulleritermes.* Collecting sites and nests are figured.)

1964, pp. 90-103. (National survey termites South Africa, 31 genera, 6 Kalotermitidae, 4 Hodotermitidae, 3 Rhinotermitidae, the remaining genera 13 are Termitidae, distribution and nesting given.)

Fernando, H. E., 1962, pp. 205-210. (Ceylon, 3 families, 23 genera, 61 species, 49 forms peculiar to Ceylon, lists 10 very common species, general biology, winged adults are produced at earliest in 2 years and 7 months, neoteinics develop as needed. Kalotermitidae damage tea and rubber.)

Ghilarov, M. S., 1962a, pp. 131-135. (U.S.S.R., European portion, termites *Reticulitermes lucifugus* in Ukraine in south, northern border of range, subterranean type, *Calotermes flavicollis* occurs in Caucasus only. Central Asia, Turkmenia, *Microcerotermes* sp., *Amitermes vilis, Anacanthotermes ahngerianus,* and *A. turkestanicus,* two latter soil termites, associated with certain plant species, *A. turkestanicus* is less xerophilous and hence more injurious.)

Gonçalves, C. R., and Silva, A. G. A., 1962, pp. 193-208. (Brazil, 51 species termites listed, with notes.)

Harris, W. V., 1953, pp. 13-14. (St. Helena, Jamestown, as early as 1863 termite damage to buildings occurred, supposedly introduced 20 years previously in timber from the Guinea Coast. This proved to be *Heterotermes platycephalus* Froggatt of Australia. *Cryptotermes brevis* was discovered at Jamestown in 1939, thus combining the damage caused by a drywood termite with that of a subterranean.)

1962, pp. 614-617. (Termites are found in France, Germany, and all countries on the Mediterranean and Black Sea; the native European *Reticulitermes lucifugus* a subterranean termite and *Kalotermes flavicollis* a drywood termite and the immigrant from the United States, *Reticulitermes flavipes.* In Italy growing concern for damage to old buildings between 1940 and 1945 led the government to set up a commission to study the problem. In France about the same time it was discovered damage was not restricted to old buildings and that they were present in 25 departments south of the River Loire in the southwest and south and in 4 "arrondisements" of Paris. *Kalotermes flavicollis* does not reach so far north, stopping at the Pyrenees. It not only damages vines, but the wood of bridges, mooring posts and buildings. Polyethylene and Polyurethane foam plastics have been damaged by termites, not for nourishment but to use in building shelter tubes.)

1963, pp. 1-9. (Hong Kong, 7 species termites known, 1 Kalotermitidae, 2 Rhinotermitidae, 4 Termitidae, compared with 25 for China.)

1963a, pp. 1-43. (Africa, Congo, Garamba Natl. Park, Guinean savanna type termite fauna, 34 species listed, 4 new; 1 Kalotermitidae, 2 Rhinotermitidae, 31 Termitidae.)

Hickin, N. E., 1963, pp. 267-284. (Europe, *Reticulitermes lucifugus,* var. *santonensis* of the Charente Maritime, France, has larger colonies and is more injurious than *R. lucifugus,* it is more robust than the typical form of the Dordogne Valley in the edges of woodland of maritime pine. *Kalotermes flavicollis* is found at Banyuls-sur-mer on the Mediterranean coast of France, it damages the stocks of the older grapevines. It cuts the life of the vine stock. *R. lucifugus* occurs in the Banyuls in dead pine stumps.)

HOCKING, B., 1965, pp. 83-87. (East and South Africa, notes on 18 species termites from 11 localities.)

IKEHARA, S. (1957) 1963, pp. 9-14. (Ryukyu Islands, termite fauna, 9 species, 4 Kalotermitidae, 2 Rhinotermitidae, 3 Termitidae, listed as common, rare and one Kalotermitidae as doubtful, map showing distribution, economic significance discussed, damage to buildings and trees and nests illustrated.)

1961, pp. 1-3. (Japanese Archipelago, formula developed to determine the northernmost limits of geographical distribution of termites at the northern hemisphere. Data given on temperature (in C.) for knowing northwest limits of termites in Ryukyu and Japanese Archipelago. Pt (lowest preferred temperature) — At (mean daily temperature in coldest month) + DT (difference of mean daily temperature between inside the nest and outside in the coldest month at the northern limit.) *Hodotermopsis japonicus* — 1.6; *Kalotermes koshunensis* — 0.9, *K. kotoensis* — 0.7, *K. fuscus* 0.5; *Leucotermes speratus* 7.6; *Coptotermes formosanus* — 0.5; *Odontotermes formosanus* — 1.3; *Eutermes takasagoensis* 1.3. A map shows the northern limits of termite distribution in the Ryukyu and Japanese Archipelago.)

JACQUIOT, M. C., 1965, pp. 623-625. (France, a colony of *Reticulitermes santonensis* at Varennes-sur-Loire (Meuse et Loire.), damage in area and control.)

KIRBY, C. S., 1965, pp. 310-314. (Ontario, Canada, *Reticulitermes flavipes* has been present for over 25 years. Economic damage was first reported in 1944 and has increased considerably in the last decade, particularly in the Toronto region. Termites have been found in four other localities in the Province.)

KIRBY, C. S., and HARNDEN, A., 1963, p. 1. (Canada, Ontario, termites in, *Reticulitermes flavipes* collected at Point Pelee, Essex County, 1929; more recently in Windsor and Oxley also in Essex County, Kincardine in Bruce County and Toronto in York County. In 1948 a survey in the City of Toronto showed eight heavy but extremely localized infestations in the southeastern part. Reexamination of the bait stakes in 1949 showed there had been very little spread except of an isolated case in the adjacent part of Scarborough Township. A second survey of the Toronto area in 1952-1953 showed only slight extensions of previously known infested zones and no new infestations. More recent surveys in Toronto have indicated extensions of infestations both in the eastern and western parts of the city.)

KRAUSS, N. L. H., 1961, p. 415. (Cook Islands, Aitutaki, *Cryptotermes domesticus* in plywood desk.)

LINSLEY, E. G., and USINGER, R. L., 1966, pp. 125-126. (Galápagos Islands, list of six species of termites and distribution on various islands:

Fam. Kalotermitidae:

Kalotermes darwini Light
" subgenus *Cryptotermes*
" *galapagoensis* Banks
" *immigrans* Snyder
" *fatulus* Light
" subgenus *Cryptotermes*
" *pacificus* Banks

Fam. Rhinotermitidae:

Heterotermes orthognathus Light.)

LOSINSKY, W. A., 1958. (Termites in south Ukraine.)

LÜSCHER, M., 1961, pp. 138-145. (Africa, air-conditioning nests has made *Macrotermes* independent of outside temperature and humidity and the widest distribution of all African termites.)

MACNAY, C. G., 1963, p. 105. (Canada, *Reticulitermes flavipes* near Kincardine railway station Ontario 10 years after report in 1954.)

MATSUZAWA, H., 1963, pp. 99-104. (Japan, Shikoku Islands, distribution *Kalotermes* (*Glyptotermes*) *fuscus* (Oshima), *K.* (*G.*) *satsumensis* (Matsumura), *Hodotermopsis japonicus* Holmgren.)

MATSUZAWA, H., and TANI, S., 1962, pp. 247-248. ((Formosa) Japan, distribution Katan termite *Glyptotermes fuscus* in southeastern district of Shikoku.)

NOIROT, C., 1960, pp. 19-24. (South Africa, lists 1 Calotermitidae, 2 Termopsidae, 2 Hodotermitidae, 2 Rhinotermitidae, 5 Termitidae.)

NUTTING, W. L., 1965a, pp. 1-5. (U.S., Southwest, northern Mexico, distribution seven species of economic importance.)

PAULIAN, R., 1961, pp. 138, 385. (Malagasy: Order Isoptera comprises 66-67 species of which 4 are not endemic, distributed in 17 genera of which 2 are endemic. The affinities are clearly African, nevertheless *Malagasitermes milloti* is Asiatic. *Microcerotermes* is represented by 15

species, *Nasutitermes* by 10. Plate VIII, p. 148, shows *Coarctotermes clepsydra* mounds. *Neotermes europae* occurs on the Island of Europa.)

1962, p. 275. (*Cryptotermes brevis* collected at Tananarive, known distribution shown.)

Richmond, E. A., 1962, p. 77. (U.S., Mississippi, Horn Island off Biloxi, *Kalotermes snyderi, Reticulitermes* sp.)

Roonwal, M. L., and Bose, G., 1964, pp. VI-58. (India, Rajasthan, termite fauna recorded, 19 species and subspecies in 12 genera and 3 families, 3 new subspecies, divisions State Rajasthan shown on map as well as collecting sites.)

Roonwal, M. L., and Chhotani, O. B., 1962b, pp. 281-406. (India, Assam region described, map, 34 termites described, 13 new species or subspecies with localities.)

Roonwal, M. L., Chhotani, O. B., and Bose, G., 1962, pp. 51-54. (India, African genus *Psammotermes* and South American genus *Anoplotermes* found in desert areas of Rajasthan and Assam respectively, *P. rajasthanicus* Roonwal and Bose and *A. shillongensis* Roonwal and Chhotani, distribution maps.)

Rui, D., 1963, pp. 146-152. (Italy, Venice, *Reticulitermes lucifugus* exists in diverse focal areas in Venice Euganea e Giulia; there is a general infestation in all the Province of the southern region.)

Russo, G., 1963, pp. 210-217. (F. Silvestri's termite collections from five continents, with localities, dates, list of species and termitophiles.)

Silvestri, F., 1959, pp. 1-784. (General, itinerary and records of F. Silvestri, published after his death, collecting localities, notes, photos, etc.)

Snyder, T. E., and Francia, F. C., 1962, pp. 63-77. (Philippines, 54 species termites, 18 genera known.)

Souza, Lopes, H. de., 1941, p. 642. (Brazil, systematic list of Isoptera collected.)

Spencer, G. J., 1963, p. 18. (Canada, Queen Charlotte Islands, British Columbia, first record *Zootermopsis;* extension range.)

Springhetti, A., 1963b, pp. 105-122. (Sicily, *Kalotermes flavicollis* is more frequent than *Reticulitermes lucifugus* but the two species have a very similar distribution. Both live from 0 to past 1000 meters above sea level, but along the coast it is a zone from a few meters to some hundred meters where *R. lucifugus* is almost absent. A map shows this distribution.)

Stirn, J., 1963, pp. 239-269. (Yugoslavia, distribution *Kalotermes flavicollis* and *Reticulitermes lucifugus,* localities on map.)

U.S., Dept, Agriculture, Plant Pest Control Div., 1963d, p. 533. Miscellaneous insects. (Nevada, Pine Creek, Spring Mountains, Clark Co., *Incisitermes minor* injuring velvet ash trees.)

1963e, p. 698. Hawaiian insect notes. (Maui, Wailuku, April 23, 1963, *Coptotermes formosanus* infesting building, another at Kahului; infestations localized and "ground termite free" Maui will attempt to eradicate this termite.)

1963g, p. 1120. Household and Structural insects. (North Dakota, *Reticulitermes flavipes,* east central McKenzie County one location, and in central Billings County two locations. *Reticulitermes tibialis,* east-central McKenzie County and central Billings County, two locations, southwestern Slope County and northwestern Slope County, two locations. *Reticulitermes* sp. in eastern Emmons County.)

1964a, p. 222. Hawaiian insect notes. Maui, Kahului, and Wailuku, *Coptotermes formosanus* discovered in April 1963, eradication program instituted.)

1964e, p. 363. (Nye County, Nevada, *Incisitermes minor* recorded.)

Vishnoi, H. S., 1962, pp. 107-109. (India, Delhi, list of termites and habits of 11 of 13 species recorded, *Eremotermes paradoxalis* do not shed wings until they pair, *Microtermes mycophagus* fungus bed in shelter tubes of damaged office table.)

Vité, J. P 1952, pp. 127-128. (Central, *Calotermes flavicollis,* a few species in Mediterranean area, a few general notes on habits, distribution, damage.)

Weidner, H., 1962b, pp. 86-93. (Africa, Sudan, list of six Macrotermitidae and two Termitidae.)

1963, pp. 409-411. (Africa, Sudan, 1962, *Psammotermes fuscofemoralis* and *Amitermes messinae.*)

Wheeler, G. C., and Wheeler, J., 1963, pp. 190-193. (U.S., North Dakota, *Reticulitermes flavipes* (Kollar), *R. tibialis* Banks, record, key to separate, *Reticulitermes* sp., workers only. *R. flavipes,*

McKenzie and Billings counties: *R. tibialis,* McKenzie, Billings and Slope counties; *Reticulitermes* sp., workers, McKenzie, Billings and Emmons counties.)

YU, C. W., and PING, C. M., 1964, pp. 10-24. (China, studies on faunal regions of Isoptera, Palearctic, Central China subregion, Oriental, China-Burma and Southern tropical, faunal regions.)

ZONDAG, R., and GILMOUR, J. W., 1963, pp. 40-42. (New Zealand, list of termites in plantations and shelter belts of exotic conifers.)

EMBRYOLOGY

GABE, M. and NOIROT, C., 1961a, pp. 411-430. (Histochemical data in the oogenesis of six species of Termitidae. Prior to meiosis, the cytoplasm of the oocytes contains only little ribonucleic acids and proteins. The amount of lipids varies from one ovariole to the other. A great increase of both ribonucleic acids and protein occurs at the end of the first meiotic prophase; the fat content remains unchanged. The important increase in size of the oocyte at the beginning of interphasis results in a diminution of both ribonucleic acids and proteins. At this stage detectable polysaccharides appear in the cytoplasm of the oocytes which contain large amount of lipids. During vitellogenesis, the cytoplasm of the oocytes contains small quantities of glycogen. Tests confirm the carbohydrate-protein constitution of the yolk. Droplets of neutral fats are found between the vitelline platelets. The constitution of the follicles is completed at the beginning of interphasis. Important histochemical modifications accompany the classical structural changes of follicle cells; to be noted in particular a great increase in the ribonucleic acid content. Polysaccharides, proteins, and neutral fats also appear in the follicle cells during previtellogenesis. These histochemical peculiarities are related to the part played by the follicular epithelium in building up the oocytes with various metabolites.)

MUKERJI, D., and CHOWDHURI, R., 1962, pp. 77-95. (India, *Odontotermes redemanni,* detailed descriptions developmental stages, micropyles, embryonic disc, etc., in general as described by Knower for *Eutermes rippertii.*)

EVOLUTION

EMERSON, A. E., 1961, pp. 115-131. (General, vestigial characters of termites and processes of regressive evolution.)

1962, pp. 17-30. (General, phylogenetic advance, primitive condition, derivative condition, improved homeostasis; regression, reduction mandibles.)

1962a, pp. 247-254. (Human cultural evolution and its relation to organic evolution of termites; biological evolution of termites is toward improved homeostasis or an increased regulation of optimal conditions of existence and continuance, and cultural evolution of man are probably based upon similar principles.)

MCKITTRICK, F. A., 1963, p. 3045. (Phyletic relationships of cockroaches and termites, comparative morphology proventriculus, female genitalia, comparative oviposition behavior. All cockroaches and the primitive termite *Mastotermes darwiniensis* deposit eggs in oothecae prior to oviposition. Wood-eating cockroach *Cryptocercus punctulatus* only very distantly related to the Panesthiinae, should be placed in Cryptocercidae.)

1964, pp. 1-197. (*Mastotermes darwiniensis* description of genital area, figured and compared with that of cockroaches, no muscled specimens available, p. 52. The proventriculus of *Mastotermes darwiniensis* as well as those of *Zootermopsis* sp. and *Nasutitermes* sp. when compared with those of cockroaches is distinctly primitive, p. 74. Other authors present morphological and biological data to show the relationship between termites and cockroaches, pp. 98 on. Probably the Blattaria are a suborder of the Dictyoptera with the mantids and the termites the other suborders. Miss McKittrick believes cockroaches have slowly declined since the Carboniferous period?)

1965, pp. 18-22. (Morphological evidence

indicates that the Blattaria and Isoptera are more closely allied than generally recognized. Five families of cockroaches are recognized. *Cryptocercus* is placed in the Cryptocercidae most closely allied to the Blattidae.)

EXPERIMENTATION

Abushama, F. T., 1964, pp. 148-150. (Laboratory experiments, *Zootermopsis angusticollis* antennal olfactory receptors proven by electrophysiological methods. Isolated antennae of older nymphs gave better results than from intact ones.)

Becker, G., and Puchelt, D., 1961, pp. 110-116. (Laboratory experiments with *Reticulitermes lucifugus, R. lucifugus* var. *santonensis,* and *R. flavipes* under controlled conditions of temperature and humidity to determine rate of feeding and mortality. In glass tubes filled with sand, wood deterioration by *flavipes* at high humidity was 10% more than *santonensis,* when soil had a lower water content *santonensis* had twice as large as *flavipes,* latter has greater need of humidity.)

Bready, J. K., and Friedman, S., 1963, pp. 337-347. (*Reticulitermes flavipes,* early death of premoult fifth instar workers exposed to high oxygen tensions under pressure due to oxygen and not pressure per se. Exposure for one-half hour to 40% oxygen mixed with nitrogen at 3.5 atmospheres of pressure produces early death, but carbon dioxide appears to exert a protective effect, since 70% or more oxygen is required to kill when mixed with this gas. The consequence of exposure to these concentrations of oxygen assumes its final form at the onset of ecdysis, when the premoult animals become paralyzed, incapable of moulting, and die within 2 days. The intestinal protozoa of the fifth instar worker are killed at a concentration of 30% oxygen when mixed with carbon dioxide and 60% oxygen when mixed with nitrogen at this pressure, so they are probably not involved in the poisoning of the termite. Adult secondary reproductives and soldiers are unaffected by oxygen at 3.5 atmospheres of pressure, as are second instar larvae.)

Collins, M. S., and Richards, A. G., 1962, p. 514. (Caste and age differences in rate of water loss and response to peanut oil and alumina in termites of Eastern U.S.A., Abs.)

Damaschke, K., and Becker, R. G., 1964, pp. 157-160. (Germany, correlation of respiration intensity of termites with changes in the impulse frequency of atmospherics.)

Gösswald, K., 1962a, pp. 605-610. (Germany, *Kalotermes flavicollis* in laboratory, Thiodan causes excitation in course poisoning which increases rate respiration.)

Grassé, P. P., and Noirot, C., 1960a, pp. 323-331. (France, *Calotermes flavicollis* nymphs of the last and next to last stages were maintained in solitary rearing for more than a year. They molt rarely and regressively. Survival of solitary individuals depends on their obtaining proctodeal food containing the indispensable symbiotic flagellates. Nymphs of the last stage may transform to imagines or sexual neoteinics. Rearing of solitary individuals shows the value of the group effect on the individual. It is possible that other factors are involved.)

Khalsa, H. G., Nigam, B. S., and Agarwal, P. N., 1964, pp. 341-344. (Antitermite tests with thermocoustic board.)

Koover, J., 1964, pp. 2887-2889. (Chemical changes in poplar wood shavings under influence of *Microcerotermes edentatus.*)

1964a, pp. 491-510. (Comparison made on ability *Microcerotermes edentatus* to utilize sound wood and wood partially decayed by fungi; decayed wood preferred, termites attracted by degradation products. Some fungi produce toxic substances. *M. edentatus* possesses enzymes other than cellulase and cellobiase, which degrade lignin, termites modify wood differently than primitive species with intestinal flagellate symbiotes.)

Osman, F. H., and Kloft, W., 1961, pp. 383-395. (Germany, insecticidal action of different constituents of venom of *Formica polyctena* Först on old larvae of *Kalotermes flavicollis* and other insects. Formic acid in vapor states showed termite larvae, with their delicate integument, were comparatively remarkably susceptible. Dry residue of venom had no insecticidal action, hence formic acid most active component. The O_2— con-

sumption of the insects was greatly suppressed after exposure to the venom.)

RESCIA, G., 1960, pp. 89-109. (Italy, *Kalotermes flavicollis* kept in artificial nests exposed to gamma BHC on soil in confined space. Mortality slow, heaviest at highest and lowest humidities.)

1960a, pp. 115-135. (Italy, *Kalotermes flavicollis,* symptoms of BHC poisoning on termites confined with small sheet of glass sprayed with 1 or 0.5% BHC. Stages of initial and total knockdown, following a period of excitement, occurred after 5-20 and 30-55 minutes, respectively, on glass sprayed the same day and after 35-45 and 60-110 minutes on glass treated up to 12 days previously. Termites left in contact with the toxicant died in 3.5 days, but survived for up to 13 days if removed after knockdown. The loss of intestinal symbionts, either from gamma BHC or excessive excretion produced by it, prevented termites from assimilating wood.)

1960b, pp. 141-145. (Italy, *Kalotermes flavicollis,* orthodichlorobenzene applied to filter paper above termites in a closed petri dish. The fumigant was rapid in action, and the stages of intoxication were not as distinct as for gamma BHC. Initial and total knockdown usually occurred in 2-10 and 12-36 minutes, respectively.)

SCHMIDT, H., 1961, pp. 8-11. (Europe, Germany, the effect of X-ray on the wood destroying termite *Reticulitermes.*)

1963, pp. 20-23. (Germany, results of experiments with *Reticulitermes flavipes* and *lucifugus* as laboratory animals, and their biological and test techniques characteristics were compared.)

SEN-SARMA, P. K., 1964, pp. 300-314. (Effects of temperature and relative humidity on the longevity of pseudoworkers of *Kalotermes flavicollis* described and illustrated.)

FLIGHT *

KALSHOVEN, L. G. E., 1962, pp. 121-137. (Java, *Coptotermes havilandi,* Bogor, September at twilight at 6 or 6:30 p.m. even as late as 10:30 emerging in large numbers from slits in the woodwork of buildings near the ground.)

NOIROT, C., and BODOT, P., 1964, pp. 3357-3359. (Flight of *Allognathotermes hypogeus* north of savanna of Dabou, Ivory Coast, winged issue from subterranean nests April 19, 1962, May 20, 1963 simultaneously from large number nests.)

SEN-SARMA, P. K., 1962, pp. 292-297. (India, Dehra Dun, *Odontotermes assmuthi* flight 4th week June, only a single swarm after heavy shower rain, about 4:30 p.m. while enough sunlight, no flight when cloudy. Soldiers and workers guard exit holes, alates emerge singly. After swarm workers seal holes, sexes more or less equal in proportion. Wings shed by violent up and downward bending followed by lateral twist of abdomen. Calling attitude taken by female only after wings shed, attraction visual not scent. Tandem behavior only female male.)

WILKINSON, W., 1962, pp. 265-286. (West Africa, Nigeria, *Cryptotermes havilandi,* alate at first positively phototactic, main flights at dusk between 6 and 7 p.m.; heavy flights continue until 10 p.m. Peak of activity in drier months January and February but flights occur every month. After a change to negative phototaxis and shedding of wings, a nest site is sought; no tandem behavior.)

FOOD, TERMITES AS

CONNORS, J., 1963, p. 2B. (U.S., Hialeah, Florida, a case believed to be unique in medical history of a 26-year-old housewife, when hospitalized for severe cramps and abdominal pain, physicians discovered numerous termites living in her stomach. This case is described in the current issue of the Journal of the American Medical Association. The patient had been living in a 15-year-old frame house and eating dinner in a darkened room, while watching television. This room had sagging wooden strips hanging from the ceiling. Winged insects in the room had been identified as termites. The patient received no

* Most records of indoor flights are under the heading "Damage."

therapy, the termites passed from her body, recovery was uneventful.)

Fox, R. M., and Fox, J. W., 1964, p. 20. (Africa, swarming termites, dealated, fried in palm oil, eaten by tribes in W. African rain forest. In Leopoldville sold in native markets, analyzed found that each 100 grams was 44.4% fat, 36% protein, and included available calcium, sulfur, and iron; the caloric value was 561.)

Goodall, J., 1963, pp. 304-308. (Gombe Stream Reserve, Tanganyika, Gombe subspecies chimpanzee in forest fish for termites in mounds, use stems of grass, vines or twigs stripped of leaves, termite cling to these tools, chimpanzees eat winged termites off stems; clasp stem between short thumb and side of index finger. Termites form major part of diet for 2-month period. Chimpanzees carry tools to termite mounds. Method social tradition, crude and primitive culture, unknown whether similar tradition among other chimpanzee populations.)

Reynolds, W. B., Jr., 1963, p. 426. (U.S., Hialeah, Florida, 26-year-old white housewife when hospitalized for severe cramps and lower abdominal pain passed insects later identified as the nymphal stage of the common wood-eating termite by the Univ. of Miami School of Medicine. The insects were quite viable. The patient had been living in a 15-year-old wooden frame house and frequently ate dinner in a darkened room watching television. The room had sagging wooden strips hanging from the ceiling. Winged termites had been noted swarming in the room and outside the house. The patient received no therapy and recovery was uneventful. The family moved from the house.)

FOSSIL

Emerson, A. E., 1965, pp. 1-46. (Review Mastotermitidae, *Uralotermes permianus* removed from Isoptera and assigned to order Protorthoptera; *Idomastotermes mysticus* removed from Mastotermitidae to uncertain status; *Diatermes sibiricus* removed from Mastotermitidae but kept in Isoptera; *Pliotermes* placed in synonymy with *Mastotermes; Spargotermes costalimae* n. gen., n. sp. described and figured from Miocene-Pliocene, Fonseca, Minas Gerais, Brazil, winged holotype with most primitive venation. Synonymy of various species *Mastotermes* given. Maps world distribution included.)

Hurd, P. D., Jr., Smith, R. F., Durham, J. W., 1962, pp. 107-118. (Mexico, Chiapas, fossiliferous amber, late Oligocene or early Miocene, 15 orders insects, 81 families, 2 species termites, one still living.)

Langenheim, J. H., and Beck, C. W., 1965, pp. 52-54. (The consistency in infrared spectra in relating resin of living *Hymenaea courbaril* L. with amber from Chiapas, Mexico, has been corroborated by plant and insect fossils in this amber, and habitat conditions. Little evidence for major evolutionary change since the Oligo-Miocene is presented.)

Larsson, Sv. G., 1962, pp. 323-326. (Copenhagen Zoological Museum, collection amber fossils. Danish amber from North Sea originated from resin of the fir, *Pityoxylon succiniferum*. Amber age between Eocene and Oligocene, about 50 million years old. About 4000 pieces amber in collection, 26 Isoptera.)

1965, pp. 135-142. (Idem. Discussion species, habitat. Fauna Baltic amber thermophilous, numerous termites, 29 fossil pieces, species from recent fauna.)

Martynova, O. M., 1962, In Rodendorf 1962, pp. 112-113. (Describes characteristics for order Isoptera, superfamily, five families, distribution, geological age, figures wings for six species.)

Tessier, F., 1959, pp. 91-132. (Africa, Senegal, Dakar, Neocene, fossil termitaria in laterite, structures described and illustrated.)

1959a, pp. 3320-3322. (Africa, Dakar, in lateritic gravel, round or ovoid chambers connected by tunnels, fossil termitaria.)

FUMIGATION

Anonymous, 1962d, p. 1. (U.S., Houston, Texas, fumigation floating drydock for *Coptotermes crassus,* 7 sections each 116 feet wide, 88 feet long, 50 feet high, pier 750 feet long, 50 feet wide, 20 feet above water line, ramp and wharf area

approximately 700 feet long, 60 feet wide, 12 feet above water line, 2,500,000 cubic feet involved. Water was bottom seal tarps, gas induction hoses were installed in top of wing walls and ran across to pier to heat exchangers, some were 300 feet long, ¾-inch heavy duty rubber hose with Neoprene center. 8½ weeks or 5000 man hours required, 207,000 pounds methyl bromide, 16,000 square yards coated Nylon tarps. Hurricane Debra destroyed one week's work, $3,500,000 worth equipment. Fumigation by Admiral Pest Control, Bellflower, Calif., successful.)

1962e, p. 4. (U.S., Neil A. Maclean Co. seminar on Vikane El Monte, Calif., distributed fumiguides to fumigators, slide rule type instrument fed data on variables met in fumigation, after proper adjustments on the guide, fumigator can read directly number of ounces Vikane per thousand cubic feet needed.)

1962k, pp. 10, 23. (California, specifications for sealing, application, circulation, dosage, etc.)

Ehman, N., 1963, pp. 18-19. (U.S., California, partial fumigations possible with Vikane, single rooms or portions of a house, careful sealing, 20 hours exposure, aired. Demand proportionately higher price, constant supervision.)

Gipe, R. F., 1963, p. 62. (Philippines, Baguio City, fumigation of an old church, infested with subterranean termites, with ethylene dibromide. Drilled through concrete block floor, poured concentrated chemical in hole, tightly sealed hole. One week after treatment halide gas detector revealed no trace of soil fumigant, treatment effective; will be used with residual chemical in future control.)

Hassler, R. K., 1961, pp. 12, 14. (U.S., sufficient length ¼-inch polyethylene tubing leading from desired spots to a measuring device necessary to obtain air samples. Other basic points outlined.)

Hickin, N. E., 1961a, pp. 205-206. (England, methyl bromide in laboratory *Kalotermes, Reticulitermes, Zootermopsis,* 48 hours, temperature average over 70° F., relative humidity about 60%, 100% kill.)

Lance, W. D., 1962, p. 16. (U.S., Florida, fumigation drywood termites with "Acritet 34-66," Acrylonitrile 34%—carbon tetrachloride 66% (Acrylonitrile also called Vinyl Cyanide or Cyanoethelene), warning odor, least toxic to man, ventilates rapidly, does not accumulate in human body.)

Meikle, R. W., and Stewart, D., 1962, pp. 393-397. (U.S., residue potentials of sulfuryl fluoride and methyl bromide after fumigation of structures on materials, especially food.)

Meikle, R. W., Stewart, D., and Globus, O. A., 1963, pp. 226-230. (U.S., fumigant mode action: drywood termite [*Kalotermes minor*] metabolism Vikane fumigant as shown by labeled pool technique. Inorganic fluoride the primary poison.)

Nolan, T., 1962, pp. 48, 52. (U.S., Miami, Florida, White Temple, Baptist Church, tarp fumigation with Acritet gas, 48-hour exposure, faulty wiring caused a fire, tents slightly damaged.)

Ogle, J. A., Jr., 1962, pp. 82, 84-86. (U.S., California, complete fumigation van, carries butane tank and heat exchanger for methyl bromide, aqualungs, tarps, fumigant cylinders, work tables, ladders, wheelbarrow, etc.)

Ross, G. M., 1962, pp. 60, 62. (U.S., Tampa, Florida, seagoing schooner *Carrie Bernice* fumigated to kill drywood termites, wooden vessel covered with 10-ounce nylon tent, sash weights sunk tent below water line, attached by metal clamps. Methyl bromide 4 pounds per 1000 cubic feet space for 24 hours, fans used for circulation, successful, by Arab Termite and Pest Control.)

Stewart, D., 1962, pp. 24, 26, 28. (U.S., California, drywood termites, use of Vikane, sulfuryl fluoride, successful fumigation depends on proper balance fumigant concentration, its confinement, exposure period and temperature.)

Stewart, D., and Meikle, R. W., 1964, pp. 2, 14, 15, 16. (U.S., post-fumigation aeration of Vikane in termite infestation in buildings.)

Sundin, B., 1963, pp. 12-13. (U.S., California, 79 Los Angeles County communities require fumigation reporting regulations: 24 hours report before commencing job; guard required; inspection required; Fire Department permits; panlocks required on sealing jobs; notice to Health Dept.; notice to Police Dept.)

Thomas, E. D., 1964, pp. 56-61. (South Africa, *Cryptotermes brevis* control by methyl bromide.)

FUNGI, ASSOCIATION WITH

Bakshi, B. K., 1962, pp. 117-119. (Both *Termitosphaeria* and *Xylaria* simultaneously present in fungus comb, termites suppress latter. Fungi render wood cellulose more easily available to certain termites. In the Macrotermitinae double symbiosis fungus and bacteria. Some fungi parasitic on termites. Fungus gardens play large part in conditioning microclimate termite nests. Termites disseminate fungi, both break down cellulose.)

Becker, G., 1965a, pp. 95-156. (Observations in nature and in buildings indicate a preference of termites for wood attacked by fungi. Tests show differences exist in behavior of termite species and action of species and strains of fungi. Fungi influence on termites in the wood nutrition can be favorable or harmful.)

Becker, G., and Kerner-Gang, W., 1964, pp. 429-448. (Influence of about 30 species of mold fungi on 4 species of termites from temperate and tropical regions tested in laboratory. Effect ranges as toxic, to usefulness as a nutriment. Variations among different species of fungi but also with different strains of one species.)

Dayal, H. M., Nigam, S. S., and Saxena, M. S., 1965, p. 48-50. (India, role of *Termitomyces* species in termitarium of *Odontotermes obesus,* white spheres in nests maintain suitable humidity.)

Lund, A. E., 1962, pp. 30-34, 36, 60-61. (U.S., association wood-destroying fungi and subterranean termites, discusses influences in detail.)

1963, p. 78. (U.S., among wood-destroying fungi one fungus produces metabolites (end products) toxic to termites, another increases the laboratory life of termites, a third produces an attractant, a fourth which exhibits a repellent action and others that are neutral. One common soil fungus is harmful. Certain fungi may affect termites in more than one manner. As yet some relationships are not supported by laboratory or field evidence.)

Rudman, P., 1965, pp. 52-58. (Causes of decay, termite resistance in *Callitris columelaris,* toxicity of wood extractives.)

Williams, R. M. C., 1965, pp. 675-576. (British Honduras, *Coptotermes niger* attacking *Pinus caribaea,* brown rot, *Lentinus pallidus,* is present in all heartwood infestations, termites wholly secondary. Laboratory tests show scarcely any feeding in sound untreated heartwood; length life in rotton heartwood grossly greater. Greater part of repellence to feeding removed by removal of turpentine fractions.)

FUNGUS CULTIVATION

Cheema, P. S., Das, S. R., Dayal, H. M., Koshi, T., Maheshwari, K. L., Nigam, S. S., and Ranganathan, S. K., 1962, pp. 145-149. (India, *Odontotermes obesus,* in fungus garden temperature constant during day 23°-33° C., humidity 86%-100%, variation from season to season, temperature during winter 18°-25° C., summer 28°-32° C., humidity varied between 85%-95%, can function under wide range.)

Das, S. R., Maheshwari, K. L., Nigam, S. S., Shukla, R. K., and Tandon, R. N., 1962, pp. 163-165. (India, *Odontotermes obesus,* micro-organisms from fungus garden, fungi and bacteria, both listed, also from guts worker, soldier and nymph termites, fungus spheres eaten as accessory food.)

Dixon, P. A., 1959, pp. 93-94. (Africa, *Termitomyces striatus* reproductive capacity.)

Harris, W. V., 1964a, pp. 78-81. (Africa, Sudan, *Pseudacanthotermes;* primitive fungus comb of *P. harrisensis,* other species possess a much more developed comb.)

Sands, W. A., 1960, pp. 251-259. (*Ancistrotermes guineensis,* laboratory colonies, fungus comb constructed from feces of worker, workers introduce basidiospores *Termitomyces* in foraging. Phylogeny Macrotermitinae reviewed.)

GASEOUS ENVIRONMENT

DAMASCHKE, K., and BECKER, G., 1964, pp. 157-160. (Increases of respiration occurred usually if the atmospherics showed minima independent of the daily rhythm, reductions of O_2 consumption with the occurrence of maxima. Atmospherics refer to temperature, humidity, and atmospheric pressure.)

HOWSE, P. E., 1964, pp. 90-99. (Lüscher has shown that an "air-conditioning" system is present in the mounds of the African *Macrotermes natalensis,* whereby hot air arises from the center of the nest and is cooled in large canals near the surface of the mound. The air is in constant circulation and some gas exchange takes place near the surface of the mound; an effective "respiratory system" is therefore present.)

LÜSCHER, M., 1961, pp. 138-145. (Africa, air conditioning and keeping the needed amount of oxygen in the *Macrotermes* mounds is accomplished by exterior ridges which serve as a conduit carrying half a dozen or more narrow channels that link the air chambers in the cellar and the attic. The mass of termites and fungi in the nest proper keep the interior of the mound considerably warmer than the outside. The air flowing in the upper ends of the ridges contains more carbon dioxide and more oxygen in the lower ends. Air-conditioning mounds *Macrotermes* has led to its widest distribution of African termites.)

GENITALIA

BANERJEE, B., 1965, pp. 435-436. (Structure of the male reproductive organs of *Odontotermes redemanni.*)

DEWILDE, J., In Rockstein 1964, p. 12. (Some termite queens have more than 2000 ovarioles in each ovary.)

LEBRUN, D., 1961, pp. 235-242. (*Calotermes flavicollis,* evolution of the genital apparatus in the diverse castes, detailed descriptions, figures.)

SPRINGHETTI, A., and GELMETTI, L., 1960, pp. 377-382. (Male genital apparatus morphology and functional activity studied in winged *Reticulitermes lucifugus, R. flavipes, R. hageni, R. tibialis,* and *R. hesperus;* for *lucifugus* other castes and stages have been studied.)

SPRINGHETTI, A., and ODDONE, P., 1962, pp. 1-9. (*Kalotermes flavicollis* two oocytes in testicle soldier, structures compared with those in hermaphrodites of *Neotermes zuluensis* and *Anacanthotermes ochraceus.*)

1963, pp. 143-152. (Rhinotermitidae, male genitalia of some castes and stages, wtih particular attention to the form of the seminal vesicles, their contents, and to the testicles activity.)

1963a, pp. 311-334. (The activity of the testicles and function of the seminal vesicles differ for individuals of homologous castes or stages of four different primitive species.)

1964, pp. 146-150. (The male reproductive internal system and the form and contents of the seminal vesicles of the Kalotermitidae and Termopsidae (Hodotermitidae in part) have been described and figured.)

GEOLOGIC AGENTS

BOYER, P., 1958, pp. 749-751. (Africa, effect of reworking by termites and of erosion on the pedogenetic development of the mounds of *Bellicositermes rex.*)

1959, pp. 41-44. (Intertropical zone, influence of termites on the conformation of certain soils.)

CONRAD, G., 1959, pp. 2089-2091. (Algeria, Béni-Abbès region, role of termites in Quaternary soil formations.)

DAVIES, O., 1959, pp. 290-291. (Equatorial Africa, Ghana, termites and soil stratification. Building and breakdown of nests (up to 40 cu. ft.) of *Macrotermes bellicosus* brings soil (believed from base of profile) to the surface, without serious warping of levels.)

GHILAROV, M. S., 1962, p. 129. (Termite Conference formed in October 1960 in Ashkhabad, Turkmenia, U.S.S.R.; ecology; animals primary factors in soil formation, termites potent factors.)

1962a, pp. 131-135. (U.S.S.R., termite tunnels contribute to decrease in evapora-

tion in soil, leads to better plant growth and soil formation.)

Glover, P. E., Trump, E. C., and Wateridge, L. E. D., 1964, pp. 367-377. (Kenya, Loita plains, vegetation patterns based on numerous active termitaria of *Odontotermes* spp. Soil analyses suggest patterns develop on soil zones containing varying concentrations of colloidal matter washed by rainwater from the termitaria. Pattern shape is influenced by topography.)

Gokhale, N. G., Sarma, S. N., Bhattacharyya, N. G., *et al.* 1958, p. 229. (India, termites increase the potassium and calcium contents of tea soils, but decrease its nitrogen content.)

Grassé, P. P., and Noirot, C., 1959, pp. 35-40. (Relationship between termites and tropical soils.)

Kevan, D. K., McE., 1962, pp. 55, 177-179, 184, 189 et seq. (Tropics, the role of termites in tropical soils, rapid disposal of cellulose-containing matter and the translocation of soil materials.)

Rozanov, B. G., 1963, pp. 63-67. (Burma, vital activity termites imparts favorable properties to soil, pH in upper layers changes from 6.2 to 7.5, the soil becomes enriched in nitrogen, the soil humus has a higher content of nitrogen and the soil becomes uniformly carbonaceous.)

Steinberg, D. M., 1962, pp. 11-16. (Central Asia, role of termites in soil formation processes, especially in takyr environments.)

Watson, J. P., 1962, pp. 46-51. (Southern Rhodesia, soil beneath termite mound.)

GLOSSARY

Ericson, R. O., 1961, pp. 1-59. (United States, foreign language terms in entomology explained in English, illustrated drawings.)

Snyder, T. E., and Francia, F. C., 1962, p. 77. (Glossary entomological terms used in keys.)

HUMIDITY

Lüscher, M., 1961, pp. 138-145. (Africa, Ivory Coast, humidity inside nest 98% to 99%, never below 96.2%.)

INTERNATIONAL COOPERATION

Kalshoven, L. G. E., 1963b, pp. 289-294. (General, review, biology, damage, damage to forests, inorganic materials, influencing soil properties, research, international cooperation, control, physiology.)

Roonwal, M. L., 1962, pp. 9-16. (International cooperation required to solve several problems, introduction, standards of measurements in taxonomy, coordination in testing techniques, antitermite codes and specifications for buildings, assessment of damage.)

INTRODUCED

Anonymous, 1964a, p. 58. (East Central Africa, Uganda, *Cryptotermes dudleyi* found in woodwork of bus.)

1964j, p. 94. (U. S., *Cryptotermes brevis,* Birmingham, Jefferson Co., Alabama.)

1965i, p. 61. (U.S., infestation report, *Incisitermes minor* in shelf of home at Waukegan, Illinois, September. *Zootermopsis angusticollis* among Douglas fir lumber shipped from Honolulu to Hilo, Hawaii, February.)

Ballantyne, W. J., 1964, pp. 50, 52, 54. (U.S., Chicago, Ill., *Zootermopsis angusticollis* infesting house, may have been in original lumber. Control by use of Woodtreat-TC with heptachlor, 8.5% pentachlorophenol and 0.5% heptachlor brushed on wood and mechanical repair.)

Bell, J. L., 1965, pp. 46, 52. (U.S., Missouri, since 1961 drywood termites (Kalotermitidae) have been introduced in in-

fested furniture from California or Florida, three cases described, no spread to buildings, remedy fumigation.)

BESS, H. A., 1965, p. 1. (Hawaii, *Coptotermes vastator* Light, was collected for the first time on July 1, 1963, in boards from a building being demolished in the Kaimuki section of Honolulu by D. H. Lewis, a P.C.O. It was not identified as that species until early in 1965 by Dr. Frances Weesner Lechleitner. This destructive Philippine subterranean termite is closely related to *C. formosanus* Shiraki which has been a serious pest on Oahu for the past 50 years.

At present, no known infestation of *C. vastator* exist in Hawaii but it is probable that it has been established for some time. The colony from which the specimens were collected was strong and hundreds of alates were present. Survey studies will be made.)

CONROY, W. L., 1963, p. 86. (First record outside Australia of *Mastotermes darwiniensis* found in Lae township area.)

HICKIN, N. E., 1963, pp. 267-284. (Only five incidences accidental importation of termites into Britain recorded: *Kalotermes* sp. to Kew from E. Africa; *Nasutitermes costalis* to Spalding, Linc. from Martinique: *Trinervitermes* sp. to Croydon, Surrey; *Zootermopsis angusticollis* to London Docks or Bristol from W. Canada; and *Cryptotermes brevis* to Watford, Middx. from Trinidad.)

MACNAY, C. G., 1961, pp. 135-136. (Ottawa, Ontario, Canada, *Reticulitermes flavipes* introduced from Florida, U.S. on cypress slab supports with potted *Philodendron*, May 1961.)

MUMFORD, B. C., 1964, pp. 1-76. (U.S., plant pests intercepted July 1, 1962, through June 30, 1963, termites pp. 23, 24, 30, 33, 37, included *Coptotermes formosanus, Cryptotermes brevis, Heterotermes convexinotatus, Incisitermes repandus, Kalotermes flavicollis, Nasutitermes chaquimayensis, N. corniger, N. ephratae, N. nigriceps* and *N. rippertii,* as well as *Reticulitermes flavipes* and *R. tibialis.* The origin, hosts, and destination of the intercepted pests are given.)

1965, pp. 1-76. (Idem, July 1, 1963, through June 30, 1964, termites pp. 3, 16, 22, 25, 26, 31, newly included termites are: *Nasutitermes guayanae, Neotermes chilensis,* and *Reticulitermes speratus.*)

1966, pp. 1-88. (Idem, July 1, 1964, through June 30, 1965, termites pp. 11, 19, 28, 30, 32, 38, 41, newly included termites are: *Amitermes wheeleri, Coptotermes testaceus, Cryptotermes cavifrons, Heterotermes cardini, Microcerotermes arboreus, Neotermes connexus, Porotermes quadricollis,* and *Spinitermes trispinosus.*)

SNYDER, T. E., 1966, p. 73. (U.S., termite stowaways intercepted in United States from 1962 to 1966, list species.)

U.S. DEPT. AGRICULTURE, PLANT PEST CONTROL DIV., 1962a, p. 261. (Fort Smith, Sebastian County, Arkansas, *Kalotermes minor* introduced in furniture, March.)

1962c, p. 1172. (Bethesda, Montgomery County, Maryland, *Kalotermes minor* in fir wood of building, October.)

1962d, p. 1217. (Storm Lake, Buena Vista County, Iowa, *Kalotermes minor* infesting chest of drawers in home (October) brought from west coast 8 years ago.)

1962e, p. 1252. (Kensington, Montgomery County, Maryland, *Cryptotermes brevis* damaged basement cupboard in home, part of wood came from Asia, infestation existed for several years. All insects and infested wood destroyed, November 24.)

1963b, p. 119. (San Antonio, Bexar County, Texas, *Incisitermes* (*Kalotermes*) *minor* introduced in January in hardwood furniture.)

1963f, p. 1087. (Wright-Patterson Air Force Base, near Fairborn, Greene County, Ohio, *Incisitermes minor* in wooden ceiling, June 18.)

1963k, p. 1219. (Philadelphia, Penna., *Incisitermes minor* in wood paneling in basement of home August 19.)

1964b, p. 319. (Denver, Colorado, *Zootermopsis angusticollis* introduced in shipment lumber from Northwest, March, 1964, all apterous nymphs.)

1964c, p. 340. (Wilmington, New Castle County, Delaware, *Cryptotermes* sp. nymphs infested wicker furniture in home and attacked floor under furniture, March 9, 1964, P. P. Burbutis, origin unknown.)

1964f, p. 953. (California, Menlo Park, San Mateo County, *Cryptotermes brevis* in bedframe in residence August 1964. Bed purchased out of state several years ago.)

1965o, p. 773. (Hawaii, Hilo, dealated adults *Zootermopsis angusticollis* (Hagen) found February 26, 1965

among Douglas fir lumber from the Mainland. According to Dr. T. E. Snyder, Hawaii is the 21st state into which this termite has been transported.)

1965r, pp. 907-908. (Texas, Harris County, Houston, *Coptotermes formosanus* found in shipyard warehouse July 2 and 12. Source infestation unknown, established for some time. Species very destructive to structures, can live without soil contact if moisture elsewhere.)

1965e[1], p. 1235. (South Carolina, Charleston, *Cryptotermes dudleyi* Banks in plywood shipping crates from Recife, Brazil, 6-24-65.)

1966a, p. 53. (Oklahoma, Comanche County, *Zootermopsis nevadensis* in wood shipped from Pacific Coast, week ending January 21.)

1966c, p. 75. (Hawaii, *Zootermopsis angusticollis* introduced in Douglas fir lumber from mainland into Hilo, Hawaii, and Honolulu, Oahu, week ending January 28.)

1966e, p. 101. (Texas, Harris County, *Incisitermes minor* in driftwood, January 28, 1966, Simon.)

U.S. Dept. Agriculture, Plant Quarantine Div., 1962, pp. 18, 25, 32, 36, and 42. (Termites intercepted, United States.)

LEGISLATION

Anonymous, 1962p, pp. 36, 38. (Wisconsin, Sheboygan in 1957 outlawed termites by ordinance requiring control, difficult to enforce. Recommendations for other cities.)

1963a, p. 50. (Florida, Hollywood, city commissioners have banned termites from new buildings by passing an ordinance requiring structural pest control for all new construction. Require soil treatment, based on F.H.A. standards.)

1964b, p. 3. (U.S., termite damage to residences no longer will be allowed as a deductible loss, according to a recent ruling by the Internal Revenue Service, which reverses a 4-year old position that homeowners could claim such casualty losses caused by insects over periods up to 15 months after infestation. The Service says it now finds, according to the latest scientific data, that severe termite damage does not result that suddenly.)

1964l, pp. 6-7. (U.S., Calfornia, A.B. No. 93 deletes provision requiring $5,000 indemnity bond, requires pest control operator to file $2,000 with Structural Pest Control Board for benefit any person damaged as result of violation of law by operator. Provides for additional bond of not less than $1,000 or more than $8,000 as condition to reissuance of suspended or revoked license for specified grounds.)

Bonaventura, G., 1961, pp. 237-254. (Italy, Inst. Pathology of Books and termite control in Italy, origin government act whereby since 1952 possible for government to conduct scientific research, antitermite protection and disinfestation. The chief control measures on the premises of State and Notarial Archives, Libraries, and National Monuments are listed.)

California, P.C.O.s, 1962, pp. 3, 4, 12. (U.S., California, proposed revision rules and regulations approved by California P.C.O.s submitted to Structural Pest Control Board in proposed revision. Report requirements, Sect. 1990, corrective measures, Sect. 1991, etc.)

Chemical Specialties Manufacturers Association, 1961. (Pp. loose leaf to be added to compilation of economic poisons (pesticides) laws, state and federal regulations, and enforcement officials, and proposed model for uniform state insecticide, rodenticide, and fungicide act, list of states which have not yet accepted the act, and description of parts of the act.)

Duchanois, F. R., 1961, pp. 42, 44, 46, 55. (U.S., Florida, minimum prevention and control standards (state) for subterranean termites, based on Forest Service recommendations; fumigation preferred for drywood termite control.)

Snyder, T. E., 1963a, p. 13. (Review: Hickin, N. E. 1963, Britain legislation to prevent introduction termites.)

MORPHOLOGY

ALAM, S. M., 1962, pp. 63-65. (Thorax most complex region body, degeneration of wing muscles in dealated adults important, early adaption of thoracic musculature to function of flight.)

BERNARDINI, P., and PALESTRA, A. M., 1956, pp. 727-734. (Italy, *Calotermes flavicollis,* tentorial glands various castes and stages.)

DELIGNE, J., 1965, pp. 179-186. (Africa, morphology and function soldier mandibles, in *Glyptotermes* denticulated mandibles, tips only slightly overlapping, work like shears against workers of other genera; in Macrotermitidae and in several Termitinae mandibles slender without denticules, move much more rapidly, widely overlapping, more lethal; in *Termes* mandibles slender, bent, and opposable at tips, which and their great elasticity give an amazing percussive power; in *Pericapritermes* mandibles very asymmetrical, they snap as in *Termes* in an even more perfected and powerful way, but only strike toward one side, using the left mandible. Different types fighting behavior considered as four different evolutionary grades acquired polyphyletically.)

GHARAGOZLOU, I., 1962, pp. 2430-2432. (*Calotermes flavicollis,* anatomic and quantitative study of adipose tissue various castes and stages.)

GRASSÉ, P. P., and GHARAGOZLOU, I., 1963, pp. 3546-3548. (France, *Calotermes flavicollis,* ergastoplasm development, and protein genesis in royal adipose tissues; describes adipose tissues; queen furnished saliva rich in protein by larvae, king much less; protein serves in the development of the vitellum of the egg.)

1964, pp. 1045-1047. (France, *Calotermes flavicollis,* a new type of cell of the adipose royal tissue, endolophycyte.)

GUPTA, S. D., 1962, pp. 169-194. (India, *Anacanthotermes macrocephalus* external anatomy of the soldier caste, head, head-capsule, head-appendages, neck, thorax, legs, and abdomen. The sexes indistinguishable externally.)

1962a, pp. 195-222. (Idem., alates, workers, sexes distinguishable in alates only, externally, detailed descriptions, figures, distribution.)

HOWSE, P. E., 1965a, pp. 137-146. (*Zootermopsis angusticollis,* description and illustration subgenual organ and associated scolopidia and campaniform sensilla mechanoreceptors.)

KUSHWAHA, K. S., 1960, pp. 209-227; 229-250. (India, external morphology *Odontotermes obesus* described, illustrated, soldier, alate, worker.)

1962a, pp. 71-114. (India, chaetotaxy soldier, worker, alate, *Odontotermes obesus* details of differences in arrangement of bristes in castes.)

1963, pp. 296-310. (India, advances in study external morphology, musculature, mechanism feeding apparatus, the chaetotaxy of all castes *Odontotermes* (*O*) *obesus,* external genitalia.)

MARKS, E. P., and LAWSON, F. A., 1962, pp. 129-171. (Comparative study of ovipositors mantis, *Mastotermes darwiniensis* and 24 species of cockroaches, evolution discussed. In termites humidity control and closed nests replaced ootheca as means protecting eggs from dessication.)

FUDALEWICZ-NIEMCZYK, W., 1965, pp. 241-252. (Ontogenesis of the innervation of neurosensorial organs on antennae of *Reticulitermes lucifugus santonensis.*)

1965a, pp. 309-320. (Organogenesis of alary nerves and tracheae of *Reticulitermes lucifugus santonensis,* describe sensilla. Anatomy of alary nerves described. Three alary tracheae present in each termite except soldiers where medianal not recognizable.)

NOIROT, C., and NOIROT-TIMOTHÉE, C., 1965, pp. 265-272. (Glandular swellings of the epidermis in the region of some abdominal sternites (sternal glands) are always present in termites. *Mastotermes darwiniensis* shows three glands, one on each of the 3rd, 4th, and 5th sternite. In the subfamilies Stolotermitinae, Porotermitinae, and Hodotermitinae there is a single sternal gland on the 4th sternite. In all other termites it is on the 5th. These glands occur on every caste, but regress in both imaginal and neoteinic functional reproductives.)

NOIROT-TIMOTHÉE, C., and NOIROT, C., 1965, pp. 185-208. (Mid-gut queen higher termites *Cephalotermes rectangularis,* electron microscope study.)

RICHARD, G., 1963, pp. 157-174. (Nervous system, survey present knowledge, description peripheral sense organs, two main

chordotonal systems: subgenual and Johnston's organs. Establishment general innervation during ontogenesis and regression; mushroom bodies of protocerebrum, eye development, and eye regression.)

SATIR, P., and STUART, A. M., 1965, pp. 277-283. (A new apical microtubule-associated organelle in sternal gland *Zootermopsis nevadensis* described and figured.)

1965a, p. 494. (Structure sternal gland *Zootermopsis nevadensis.*)

SPRINGHETTI, A., 1963a, pp. 155-159. (Italy, *Kalotermes flavicollis,* abnormal morphological characters described and figured in various castes, divided pronotum, intercaste, and supernumerary segments of a tibia-tarsal complex.)

VISHNOI, H. S., 1962, pp. 13-30. (India, *Odontotermes obesus,* cephalic musculature various castes, dissections and sections in detail.)

ZUBERI, H. A., 1962, pp. 393-395. (General, comparative study head of various castes termites in three families termites, modifications inter- and intra-specific.)

1963, pp. 147-208. (Structure brain and its nervous connections studied in detail in *Trinervitermes tchadensis,* with its high degree of polymorphism. A comparative study of the brain and its nervous connections in various castes of species in Mastotermitidae, Hodotermitidae and Termitidae was made. The results were compared with available data on the brain of social insects and cockroaches, etc.)

NESTS

BECKER, G., 1962e, pp. 359-379. (India, observations on nests of *Microcerotermes cameroni, Macrotermes estherae, Odontotermes* spp., *Microtermes* spp., *Nasutitermes anamalaiensis* and *N. beckeri,* and *Trinervitermes nigrirostris.* Nests figured, biological data, swarming, etc.)

BODOT, P., 1964, pp. 283-291. (Africa, north of "savane de Dabou," Ivory Coast, young nests *Bellicositermes bellicosus* and *natalensis* show a quite total identity. As nests grow bigger this likeness vanishes. To the development of the top height of *B. natalensis* nests is opposed the lateral development of the *B. bellicosus* nests, marked by the progressive disappearance of the "paraecie" as well as the idiotheca and the basement chamber. The dwelling place loses its individuality and divides into units more or less distinguishable.)

CHOPARD, L., 1961, pp. 21-31. (Architectural art of termites, secrets of.)

COATON, W. G. H., 1962, pp. 61-70. (Northern Rhodesia, nesting habits and mounds termites destroying young trees in new plantations of Eucalyptus. *Macrotermes* species constructed the most massive and striking mounds, one 18, another 25 feet high. Composed of sandy subsoil using saliva to wet clay binding material, remain without vegetation for long periods.)

1962a, pp. 159-166. (Northern Rhodesia, origin and development massive vegetated mounds *Macrotermes* and *Odontotermes,* long succession mounds may arise on site original hummock inhabited by a variety of termites. Over a long period these hills become massive and vegetated. May be one hill to 1.42 acres over 285 acres.)

GONÇALVES, C. R., and SILVA, A. G. A., 1962, pp. 193-208. (Brazil, observations on termites and figures of nests, 7 Kalotermitidae, 5 Rhinotermitidae, 39 Termitidae, 51 in all; nests figured are: *Amitermes excellens* Silv., *Constrictotermes cyphergaster* (Silv.), *Cornitermes bequaerti* Emer., and *C. snyderi* Emer.)

GOODLAND, R. J. A., 1965, pp. 641-650. British Guiana, Northern Rupununi Savanna, ecological distribution termitaria *Nasutitermes ephratae* correlated with quantitative expressions of the vegetation and environmental factors. Termites impoverish surrounding soils, concentrate soil nutrients into mounds, reduce plant cover, decrease water-retaining capacity of soils; aid growth woody plants by improving drainage; part of savanna ecosystem; bibliography.)

GRASSÉ, P. P., and NOIROT, C., 1961, pp. 311-359. (Africa, *Bellicositermes bellicosus* types of nest and variation; *B. bellicosus* subsp. *rex,* giant termitaria; *B. natalensis,* cathedral, dome, chimney, and round tumulus. Causes of variation, composition of mounds, growth, material clay mixed with saliva, food, size queens, no neoteinic reproductives.)

KRISHNA, K., 1965a, pp. 39-40. (Nesting habits of termites. Abstract.)

LÜSCHER, M., 1961, pp. 138-145. (Africa, Ivory Coast, air-conditioned nests brilliantly designed to maintain temperature and humidity, while permitting oxygen to flow into nests and carbon dioxide to flow out. Microclimate nests best at 86° F. in tropics, 79° F. in temperate zone. Population medium mound *Macrotermes* in Africa two million individuals. Colony *Nasutitermes arboreus* will die in dry air.)

NOIROT, C., and NOIROT-T. C., 1963, pp. 180-188. (Ivory Coast, *Cubitermes fungifaber* growth nest discontinuous, shows marked seasonal cycle, successive addition; type of new building (cylindrical or hat-shaped) quite independent from original; mutilation of nest followed by regeneration only if renewed portion was still in building.)

NOIROT-T. C., and NOIROT, C., 1965, pp. 185-208. (Intestine of the queen of the higher termites, study with an electronic microscope.)

PUCKETT, P. P., 1965, pp. 84-85. (The termite an ancient architect.)

ROONWAL, M. L., 1962b, pp. 131-150. (India, Dehra Dun, *Odontotermes obesus,* three forms; mound structure above ground 10 feet and nest and royal cell below ground; as many as 90,000 individuals, soldiers 5.5%-7.7%, workers 49-66.5%, nymphs 28-43.3% and usually one royal pair, queen as long as 75 mm. Eggs—depositories or fungus combs in rounded excavations, 1 egg laid per second. Moisture content of fungus comb mean 51.63% water.)

ROONWAL, M. L., and CHHOTANI, O. B., 1962c, p. 85. (India, Orissa, Barkuda Island, Chilka Lake, *Odontotermes feae* usually purely subterranean, occasionally builds a mound. Low earthen, sprawling roughly dome-shaped. Several holes open on the surface and lead into tunnels where fungus combs lie in vaults, mound of multilocular type. Royal chamber is occentric, lies near ground level.)

ROONWAL, M. L., and GUHA-ROY, S., 1965, pp. 114-129. (India, *Odontotermes obesus,* dimensions 270 mounds in Dehra Dun District measured and their interrelationships studied statistically. Height range mean 801 ± 24 mm., diameter 2249 ± 334.68 mm.)

SANDS, W. A., 1961, pp. 177-188. (West Africa, *Trinervitermes,* structure and size distribution 5 species *T. ebenerianus* commonest, most widely distributed, mound 24 inches high; *T. carbonarius* mounds 18 inches to 4-5 feet in height, more massive, thicker walled; *T. oeconomus* similar, but considerable number open foraging holes; *T. auriterrae* mounds resemble those of *ebenerianus,* do not contain stored grass fragments, dark fecal lining deep-cut and distinct; *T. suspensus* rare, builds mounds of its own, stores grass fragments. Size distribution mounds arise from seasonal activities of the termites, each distribution representing the mounds of one year. Mean annual increment 4-5 inches diameter; colony expansion by erection of supplementary mounds after primary mounds 3-4 years old; mean number mounds per colony 3-6.)

1965d, pp. 557-571. (West Africa, Zaria, Northern Nigeria, termite distribution in man-modified habitats with special reference to species segregation in the genus *Trinervitermes. T. ebenerianus,* densities mound populations higher in cleared areas.)

SCHMIDT, R. S., 1960, pp. 357-368. (Africa, *Apicotermes* nests, wall perforations function as gas diffusion systems. In *Apicotermes arquieri* there is not a regression of pores, in *A. occultus* there is. Increase of diffusion surface may be an important function of the shagreen network and of the space or sand envelope surrounding nests.)

1964, pp. 221-225. (Africa, *Apicotermes,* evolution nest building and functions some nest structures, revised phylogenetic tree of genus, based mainly on nest characteristics, is illustrated.)

TSAI, PANG-HWA, CHEN, NING-SHENG, CHEN, AN-KUO, and CHEN, CHIH-HWEI., 1965, pp. 53-70. (China, architecture and development of the termitarium of *Odontotermes (O.) formosanus.*)

1965a, pp. 128-139. (China, activity of *Odontotermes (O.) formosanus* on the ground of Yangtse-dike and its relation to the nest.)

UICHANCO, L. B., 1961, pp. 215-218. (Philippines, *Macrotermes gilvus* probable relation to altitude in mound building, lowland and upland forms, ecological notes.)

NUTRITION

Alibert, J., 1963, pp. 1-12. (France, *Cubitermes fungifaber,* in laboratory workers and soldiers received regurgitated food (stomodeal) detected by contamination with radioactive phosphorus. Queen first to be contaminated by salivary liquid from workers, receives constant nourishment; alates close to flight heavily loaded with saliva. Nymphs of last but one stage and king receive only poor quantity.)

1964, pp. 5260-5263. (Evolution in time of fungi mounds constructed by termites, for nutrition.)

Becker, G., 1965, pp. 151-184. (Influence of wood and soil humidity on the choice of nutriment and quantity of feeding of six species of termites in five genera from temperate and tropical regions, tests made in the laboratory.

In food choice tests with wood pieces of different water content in glass dishes, *Kalotermes flavicollis* Fabr. preferred in case of pine sapwood with about 15% loss of weight due to attack by the Basidiomycete *Merulius lacrimans* specimens with a water content of 40% to 50%, in case of wood not attacked by fungi specimens with a water content of 20% to 30%. *Zootermopsis nevadensis* chose out of pine wood with a 6%—decomposition by the Basidiomycete *Poria vaporaria* specimens with a higher water content, viz., from 50% to 80%, than did the *Kalotermes* species. When *Heterotermes indicola* Wasmann and *Reticulitermes lucifugus* Rossi var. *santonensis* Feytaud were given, besides moistened pine sapwood slightly attacked by fungi, wet soil, the termites did not prefer any range of wood humidity. Without the addition of soil, the *Heterotermes* workers chose specimens with a water content of 80% to 100%. The *Reticulitermes* workers also preferred moist wood, but not so distinctly high a water content as the *Heterotermes* species did. Whether or not there was soil in the dishes, *Nasutitermes ephratae* Holmgren fed approximately the same quantity of beech wood with a water content of 50% to 100%. Only wood containing less than 40% to 50% water was deteriorated to a minor extent. Thus the range of humidity preferred by this species is relatively broad.

Glass tubes, 120 cm. long and vertically set up, were filled with humus-containing soil and wood specimens that were arranged with a distance of 10 cm. from one another so that the water content decreased from bottom to top. *Heterotermes indicola, Reticulitermes lucifugus* var *santonensis,* and *R. flavipes* Kollar behaved differently. An aerotaxis was more distinct with *H. indicola* than with the *Reticulitermes* species. Despite a low soil and wood humidity, all the three species fed most near the surface of the soil. Apparently because of an optimum humidity, the zone from 60 to 80 cm. deep under the surface was preferred, too, but not by all the species alike. The termites in their turn increased the water content of the wood specimens attacked by them.

In a third series of tests, the activity in feed and gallery building as well as the mortality of uniform groups of various termite species were determined. Wood specimens were deposited in plastic jars filled with sand or humus-containing soil of differently gradated contents of humidity. The ranges of water content of sand and humus-containing soil providing comparable amounts of feeding were very different. The lower limit for the feeding activity and a longer survival of the insects was with sand below a 1% water content, with humus-containing soil more or less below an 8% content. The upper limit was with sand partly at and partly above 20%, with humus-containing soil above 32%. According to the results, the quantity of feeding by the Rhinotermitidae species obviously did not depend on the moisture content of the wood which is correlated with the soil humidity, but on the soil humidity itself, at least above the fiber saturation of the wood. Not the absolute water quantity of the soil was decisive, but the quantity in proportion to the water-retaining capacity of the soil. With regard to the *Nasutitermes* species, carton material of the animals added on the top of the soil proved to be of influence. The most favorable range of water content varied somewhat with the termite species. In tests with humus-containing soil, it was with *Reticulitermes flavipes* and *R. santonensis,* the latter bred at 30° C., at

16% to 24%, with *Zootermopsis nevadensis* and *Nasutitermes ephratae,* the latter with carton material, at 18% to 22%, with *Reticulitermes santonensis,* bred at 26° C., at 22% to 30%, with *Heterotermes indicola* and *Nasutitermes ephratae,* the latter without carton material, at 20% to 30%. In tests with sand, the most favorable water content was for *Heterotermes indicola* 6% to 10%, for *Nasutitermes ephratae* with nest material 6% to 14%. No significant difference was stated between 2% and 18% for the *Reticulitermes* species and for *Nasutitermes* without nest material. The *Heterotermes* species was most susceptible to minor humidity as well as to high water content of the soil.

The results obtained were related to the natural environmental conditions of the termites and their behavior in nature.)

Bready, J. K., and Friedman, S., 1963, pp. 703-706. (*Reticulitermes flavipes* eggs were submerged in 0.1% aqueous solution of zephiran chloride to obtain sterile nymphs. Eggs so treated appeared anatomically normal and hatched successfully in the presence of older workers, but only those exposed to zephiran for as long as 10 minutes were found to be decontaminated when tested on sterile nutrient agar plates. First-instar nymphs, which normally are assisted from the eggs by older workers, were removed by hand with no detrimental effects, but died in 7 days unless fed proctodeal and/or stomodeal food by older instars. Neither synthetic nutrient solutions nor artifically fed fecal solutions served as substitutes for the normal diet. Inconclusive results were obtained in experiments to determine whether grooming by older workers was a requisite for increasing the longevity of the first-instar nymphs.)

1963a, pp. 706-708. (*Reticulitermes flavipes,* in an effort to obtain sterile third- and fifth-instar workers for nutritional studies, antifungal and antibacterial agents were incorporated into the diet. Methyl parahydroxy benzoate proved adequate as a fungicide at levels as low as 0.015 molar, but none of the antibiotics tested singly or in combination killed all of the termite-associated bacteria. Changes in materials and techniques were not effective in increasing the potency of the bactericides.)

Gagliardi, P., 1963, pp. 350-356. (Termitin in animal nutrition.)

Kurir, A., 1963a, pp. 101-107. (The white ball-shaped conidia of the fungus *Termitomyces* are food for the larvae of *Reticulitermes flavipes,* eggs usually carried by workers, also by a few soldiers. Fungi grows independently not cared for by termites.)

OBITUARY

Anonymous, 1962j, pp. 53-54. (U.S., Ruric C. Roark, 1887-1962). (Pioneer in pesticides, synthetic organic and those derived from plants, developing fumigants in U.S. Dept. Agriculture.)

Hodson, A. C., 1965, p. 594. (Australia, Frederick G. Holdaway, 1902-1965). (Biology and control termites Australia, 1933-1936.)

Michelbacher, A. E., 1965, pp. 207-234. (U.S., Edward Oliver Essig, 1884-1964). (Articles on western termites, 1914-1958.)

Nelson, R. H., 1965, p. 770. (Brazil, Angelo da Costa Lima, 1887-1964.) (Publications on the insects of Brazil, including termites, 1936, 1939 and 1952.)

Pemberton, C. E., 1965, pp. 39-45. (Hawaii, David Timmins Fullaway, 1880-1964.) (Publications on habits, damage, and control termites Hawaii 1920 to 1931 and 1945.)

Springhetti, A., 1963, pp. 391-393. (Carlo Jucci, 1897-1962.) (Brief account of work on termites.)

Thurman, E. B., 1963, pp. 213-216. (U.S., Robert E. Snodgrass, 1875-1962, morphologist, extraordinary as an individual, morphology termites.)

PARASITES

Beal, R. H., and Kais, A. G., 1962, pp. 488-489. (U.S., *Aspergillus flavus* apparent infection subterranean termites *Reticulitermes virginicus* and *R. flavipes.* Fungus caused 80% mortality workers *R. virginicus.*)

CIFERRI, R., 1963, pp. 235-252. (Dominican Republic, ectoparasitic fungi of the Termitariaceae including *Termitaria snyderi* found on *Nasutitermes morio*. A new genus *Sylviacollaea,* type *termitaria* described.)

DESPORTES, I., 1963, pp. 4013-4015. (Development cycle of a new Gregarina: *Diplocystis zootermopsidis* sp. n. (Eugregarina, Diplocistidae).)

ERNST, E., 1964a, pp. 569-576. (Ivory Coast and Eastern Congo, three forms of soldiers of *Acanthotermes acanthothorax* Sjöstd. had heads distorted by Dipterous larva and some have incompletely developed mandibles, they are myiagene soldiers.)

GEIGY, R., HECKER, H., and KEISER, F., 1964, pp. 280-286. (Africa, phorid (Dipterous) larva is parasitic in head soldier *Bellicositermes bellicosus* in the form of myiasis causing aberration. Parasite described and figured as well as aberrant soldiers.)

LUND, A. E., and ENGELHARDT, N. T., 1962, pp. 131-132. (U.S., *Absidia coerulea,* Bainier (Mucorales) parasite on subterranean termites.)

MANIER, J. F., 1960, pp. 677-686. (France, *Paracoleomitus grassei* n. gen., n. sp. schizophyte in colon *Calotermes flavicollis.*)

SMYTHE, R. V., and COPPEL, H. C., 1965, pp. 423-426. (U.S., Wisconsin, a soluble toxin preparation derived from *Bacillus thuringiensis* is toxic to *Reticulitermes flavipes, R. virginicus, R. hesperus* and *Zootermopsis angusticollis;* 75% mortality after 9 days; in combination with spores and inclusion bodies results in greater than 90% mortality in the laboratory.)

WEISER, J., and HRDÝ, I., 1962, pp. 94-97. (Europe, two species of *Pyemotes* were experimentally exposed to *Reticulitermes lucifugus* and *Kalotermes flavicollis* under controlled conditions in the laboratory. The mites attached themselves and in 5 days only exuvia remained. *Pyemotes* might be useful in the control of termites.)

WELCH, H. E., 1965, pp. 275-302. (Entomophilic nematology is the branch of parasitology that deals with nematodes associated with insects. Nematodes can be utilized for biological control. An extensive survey of the literature is included.)

YENDOL, W. G., 1965, p. 4881. (Entogenous fungi parasitic in *Reticulitermes flavipes.* In the laboratory *Entomophthora coronata* produced four times more conidia than *E. virulenta.* In pathogenicity tests with *Reticulitermes flavipes, E. coronata* produced mortalities of 98.5%, 48 hours after inoculation. *E. virulenta* was avirulent, and failed to produce a frank infection. Approximately 38% of the termites infected with *E. coronata* showed penetration of the fore intestine before death. Invading hyphae attacked the fat body and musculature first, then rapidly destroyed the remaining tissues as early as 32 hours after inoculation.)

YENDOL, W. G., and PASCHKE, J. D., 1965, pp. 414-422. (U.S., Indiana, in laboratory tests *Entomophthora coronata* produced a mortality of 97%, 84 hours after inoculation of *Reticulitermes flavipes.* In the digestive tract germinating conidia penetrated the oesophageal wall, but not the crop, mid- and hind gut. Invading hyphae attacked the fat body and musculature, then rapidly destroyed the remaining tissues as early as 32 hours after inoculation.)

PHYLOGENY

KRISHNA, K., 1961, pp. 303-408. (World, phylogeny Kalotermitidae, chart.)

PHYSIOLOGY

BREADY, J. K., 1963, pp. 3039-3040. (Abstract, physiological investigations on *Reticulitermes flavipes,* egg production decreased in secondary reproductive pairs with fewer supporting workers, length life reproductive pair increased with increase in number supporting workers, oxygen toxic to protozoa.)

DELIGNE, J., and PASTEELS, J. M., 1963, p. 694. (Endocrine phenomena in the kidneys of *Microcerotermes* sp.)

LÜSCHER, M., 1959 (1960), pp. 161-166.

(Physiology of the differentiation of castes in *Kalotermes flavicollis.*)

MISRA, J. N., 1964, pp. 131-136. (Physiology of digestion in termites.)

STEINBERG, D. M., 1962a, pp. 37-48. (S.S.R., physiology of the development of the polymorphism in termites.)

POPULATION

BRIAN, M. V., 1965, pp. 6, 13 to 15, 19, 34, 43, 44, 47, 48, 58, 65, 70, 72, 76, 78, 83, 101, 105, 108-109. (General, populations, reproductives, fecundity, growth, gaseous exchange, mounds, maturation, age reproductives, structural limitations nests, flights, mating, food supply, mode of dispersion, intraspecific and intergeneric competition, predators and parasites, population regulation.)

GREAVES, T., 1961, Termites in forest trees, p. 39. *In* Commonwealth Sci. and Indus. Res. Org., Divis. Ent. 1960-1961 Ann. Rept. (Australia, populations of two species of *Coptotermes* were studied and a total of 773,520 termites comprising 665,010 workers, 65,650 soldiers, 1,170 nymphs, and 41,690 juvenile forms was obtained from a colony of *C. acinaciformis* in a blackbutt at Pine Creek State Forest. A total of 697,500 termites was obtained from a peppermint (*Eucalyptus robertsoni.*)

1962, pp. 1-17. (Australia, colonies of *Coptotermes acinaciformis* and *C. frenchi* in forest trees vary in numbers with the temperature, on cold nights the greatest number of the former was 796,900, the latter 700,000. Nests of *Porotermes adamsoni* numbered only a few thousand individuals.)

1964, pp. 1-4. (Australia, the greatest aggregation in the nursery of *Coptotermes acinaciformis* occurred in winter, 796,890, on July 5, 1960. Using a cooling system of dry ice, a total of 1,249,000 termites were obtained.)

1965, p. 46. (Australia, N. S. W., *Coptotermes frenchi* population living tree 614,000 termites.)

LÜSCHER, M., 1961, pp. 138-145. (Africa, *Macrotermes* nest medium mound 2 million individuals.)

SANDS, W. A., 1965, pp. 49-58. (West Africa, savannah region Northern Nigeria, small-domed mounds harvester *Trinervitermes ebenerianus* were sampled with a sharpened tube, not a noisy pipe auger. Scrubby bushes and scattered trees occurred on upper slope reddish-brown sandy loam. Fluctuations in population density and percentage of young stages are related to a hypothetical annual cycle of activity depending on climatic conditions. Diurnal changes in mound populations cannot readily be related to climatic conditions, mound populations being in most cases depressed at night. When these movements take place, the alate nymphs are more rapidly affected, and more soldiers remain behind. Rough estimates of total populations in terms of individuals per acre are given, 2 to 5 million (up to 10 million), of these one or two hundred thousand per acre alates annually.)

PREDATORS

ANNANDALE, N., 1910, pp. 201-202. (Calcutta, India, during heavy rainstorm termites flew into dining room destroyed by cockroach *Periplaneta americana,* gnawed abdomen, if disturbed carried prey away in mandibles.)

ANONYMOUS, 1937, p. 123. (Cockroaches could eliminate termites from houses.)

1953, p. 50. (Hawaii, Honolulu, after a methyl bromide fumigation for termites in homes, termite carcasses became an abundant food supply for mites, in the 2 months the dead termites were suitable for food, two generations of mites were produced; a heavy outbreak of human skin lesions from the mites resulted when the food supply of dead termites was exhausted. Piperonyl butoxide and pyrethrins in an oil base eliminated the mite infestation.)

BEIER, M., 1964, pp. 198-200. (New species pseudoscorpion in *Calocheiridius* from termite mounds in Congo.)

BODOT, P., 1961, pp. 3053-3054. (Africa, *Dorylus* (*Typhopone*) *dentifrons* predaceous ant destroying mounds *Bellicositermes natalensis.*)

CASIMER, M., 1960, pp. 230-232. (Australia, *Tegea atropicta,* Hemiptera: Reduviidae, an unusual predator, probably specific

on *Nasutitermes exitiosus* eastern half Australia.)

EISENMANN, E., 1961, pp. 636-638. (Panama Canal Zone, Barro Colorado Island, birds of all kinds attracted to winged sexual adults. On May 11, 1961, in one spot 16 species birds, some primarily vegetarian, caught winged termites, an additional species observed elsewhere on same day.)

FALLS, O., 1938, p. 18. (U.S., use cockroaches to control termites in buildings not feasible.)

GRASSÉ, P. P., and NOIROT, C., 1961, pp. 311-359. (Africa, ant *Paltothyreus* battle with soldier *Bellicositermes natalensis,* latter with cutting grip, pl. 20.)

KEVAN, D. K. MCE., 1962, p. 18. (Africa, narrow-mouthed toad *Breviceps rosei* burrows underground to feed on subterranean termites.)

MATHUR, R. N., 1962, pp. 137-139. (Ants of several genera prey on termites in India, on alates, as do dragonflies and robber-flies, muscid-flies, cockroaches, frogs and toads, lizards, birds, and mammals; predators and termites listed.)

ROONWAL, M. L., and CHHOTANI, O. B., 1962b, pp. 281-406. (India, Manipur, common white-bellied rat ate swarming *Odontotermes horni.*)

SMITH, H. M., 1957, p. 102. (Blind snake *Leptotyphlops* has curious habit eating termite workers by swallowing them from caudal end, but only as far as the cephalothorax, then sucking the contents from the abdomen, and regurgitating the deflated body.)

WEBER, N. A., 1964, pp. 197-204. (Africa, lists ants from Belgian Congo preying on termites collected and identified by Dr. A. E. Emerson with notes by Emerson and Weber and references to Weber's previous papers, 20 ant species.)

PROTOZOA

ABLIN, R. J., 1964, pp. 16-17. (Immunological response between flagellates symbiotic to a roach and a termite, rabbit.)

1965, pp 441-442. (Immunological response between protozoa symbiotic to a roach [*Cryptocercus punctulatus*] and a termite [*Zootermopsis nevadensis*].)

BACCETTI, B., 1963, pp. 230-255. (In *Reticulitermes lucifugus,* Italy, a wide microfauna and microflora in workers and soldiers is harbored in their colon. The electron microscope proves that digestion of cellulose, and the absorption by the termite takes place in the mesenteron.)

CLEVELAND, L. R., 1960, pp. 110-112. (Photographs of living centrioles in resting cells of *Trichonympha collaris.*)

1960a, pp. 149-162. (*Trichomonas gigantea,* the centrioles supply the stimuli for the syntheses in their own reproduction in each cell generation but also for the production of flagella and other organelles.)

1960b, *In* Stauber 1960, pp. 5-10, effects of insect hormones on the protozoa of *Cryptocercus* and termites.)

CLEVELAND, L. R., and GRIMSTONE, A. V., 1964, pp. 668-685. (*Mixotricha paradoxa,* a large polymastigote flagellate from the gut of *Mastotermes darwiniensis,* uses its four flagella to steer it, its movements are brought about by coordinated undulations of many thousands of spirochaetes which cover the body. The spirochaetes are attached to small brackets of complex internal structure, which arise in rows from the cell surface. In addition to one or more spirochaetes, each bracket is also associated with an extracellular bacterium.)

DESAI, R. N., and UTTANGI, J. C., 1962, pp. 110-114. (India, Dharwar, Mysore, gregarine protozoan *Sphaerocystis termitis* n. sp. from Indian termite *Capritermes incola.*)

DINI, W., and CESAR, H. C., 1960, pp. 403-407. (Symbiosis in *Heterotermes longiceps,* Brazil.)

GRASSÉ, P. P., and HOLLANDE, A., 1963, pp. 749-792. (Flagellates of the genera *Holomastigotoides* and *Rostronympha;* chromosome structure and coiling cycle in *Holomastigotoides psammotermitidis* host is *Psammotermes hybostoma.*)

GRIMSTONE, A. V., and CLEVELAND, L. R., 1965, pp. 387-400. (Morphology and function of axostyles of certain flagellates from the gut of termites and the wood-feeding roach *Cryptocercus punctulatus.*)

GUZMAN, S. R., 1960, pp. 73-77. (Chile, *Calotermes chilensis,* lethal temperature flagellate protozoa 39° C. for living insects kept at that temperature in humid atmosphere for 24 hours, highest defaunation temperature for termites known, termites live 2 weeks.)

1961, pp. 83-96. (Chile, *Oxymonas chilensis* n. sp., flagellate symbiont of *Calotermes chilensis,* uncertain position of three structures in genus discussed.)

1962, pp. 57-63. (Chile, *Stephanonympha calotermitis* n. sp., flagellate symbiont (Calonymphidae) described from *Calotermes chilensis,* key to genera in family, distinguishing characters of *Stephanonympha* species.)

Haldar, D. P., and Chakravarty, M. M., 1964, pp. 377-381. (Sudanophilic simple and bound lipids in three species of termite flagellates.)

1964a, pp. 77-81. (India, cytochemical studies on three species of termite flagellates.)

Honigberg, B. M., 1963, pp. 20-63. (Evolutionary and systematic relationships in the flagellate order Trichomonadida Kirby. *Monocercomonas moskowitzi* n. sp. and *Trichomonas nonconforma* n. sp. are named and diagnosed. Keys to all families and subfamilies of order and genera of Monocercomonadidae and Trichomonadidae are included.)

Jakobi, H., and De Loyolae, Silva, J., 1959, pp. 113-117. (Brazil, chemical Acetarson, removed flagellate protozoa from *Eucryptotermes* sp. in 3 days, no harm to termites.)

Krishna, K., 1961, pp. 303-408. (List in systematic order protozoa family Kalotermitidae. Generic differentiation protozoa took place before differentiation of Kalotermitid genera.)

Krishnamoorthy, R. V., 1960, pp. 156-161. (India, digestive enzymes of *Heterotermes indicola.*)

Lavette, A., 1960, pp. 4202-4204. (General, polysaccharides of symbiotic flagellates.)

1964, pp. 1106-1108. (Lipides in flagellates symbiotic with termites colored by Sudan Black B.)

1964a, pp. 2211-2213. (Digestion of wood: cellulose and lignin by symbiotic flagellates.)

Misra, J. N., 1962, p. 153. (Intestinal cellulose digesting symbionts of two types: flagellates in lower termites, microbial flora in higher. Enzymes in *Odontotermes obesus,* bacteria in hind gut.)

Rose, M., Arces, P. J. D'., and Mazzella, O., 1960, pp. 1-39. (Algeria, histochemical researches on the trophozoite adult of *Joenia annectens,* a joeniid flagellate symbiont of *Calotermes flavicollis.*)

Uttangi, J. C., and Desai, R. N., 1962, pp. 97-109. (Dharwar, India, gregarine protozoa *Hirmocystis speculitermis* and *H. dharwarensis* and *Steinina termitis* in the non-xylophagous termite *Speculitermes cyclops sinhalensis.* Infection confined to fore gut of host.)

1963, pp. 39-43. (India, *Metaclevelandella termitis* n. gen., n. sp. of heterotrichous ciliate (fam. Clevelandellidae) in *Capritermes incola.*)

Uttangi, J. C., and Joseph, K. J., 1962, pp. 155-161. (Flagellate symbionts, list of protozoa from India, live in rectal sac, contain enzymes digest cellulose, account for ⅕ to ⅓ weight termites, two important orders Polymastigida and Hypermastigida, over 200 species, 48 genera, 89 species 14 genera Indian region, description genera and specificity, physiology of digestion by enzymes, mode of transmission through proctodeal food, molts and reduce numbers.)

RACKET

Bernard, C., pp. 8, 10-11. (U.S., California, C. Hodel in the April 1962 issue of the California Real Estate Magazine, page 10, published an article "Is the termite business becoming a legalized racket?" The author lacked knowledge of the Structural Pest Control Board laws of California and of the use of the Standard Inspection Report Form. History of legislation regulating industry 1935-1961 given and inspection report form explained in detail answering Hodel's criticism.)

Hall, D. G., 1966, p. 8. (U.S., Georgia, racket, only 7 of 84 inspected infested houses by P.C.O. in Savannah in 1934 infested, reported to local sheriff.)

Hodel, C., 1962, p. 10. (U.S., California, criticism of Structural Pest Control Board and Standard Inspection Report Form implying that the termite business was tending toward being a racket, summary of report in detail.)

RADIATION

Alibert, J., 1963, pp. 1-12. (Frame, *Cubitermes fungifaber* in laboratory workers and soldiers received regurgitated food (stomodeal) detected by contamination with radioactive phosphorus. Queen is first to be contaminated by salivary liquid from workers, receives constant nourishment; alates close to flight heavily loaded with saliva. Nymphs of last but one stage and king receive only poor quantity.)

Becker, G., and Burmester, A., 1962, pp. 416-426. (The results published to date on the effect of y-radiation on wood properties compiled; in authors' own experiments pine, spruce, and beech wood exposed to different doses cobalt-60-radiation. Conditions for the development of termites (*Heterotermes indicola*) were studied, and the results on the eating activity on wood irradiated for different durations tabulated. The reaction to radiation differed for the three wood species. At the heavier dosages of radiation, the termites necessarily ate more wood to satisfy their requirements since the constituents, carbohydrates, were changed; at wood lightly radiated, the termites ate less wood, less than untreated.)

Gösswald, K., and Kloft, W., 1961, pp. 7-12. (Germany laboratory radiobiological experiments with insects including termites, use of radioactive isotopes as tracers in social life opens new field. Young termites are not helpless. Marking food with isotopes gives data of great interest. Young of first and second stadia do not feed themselves, fed by other termites as are soldiers. No asocial tendencies in sexual males. In case of many termites one caste which has suddenly become overabundant will be completely eaten even though fully sound.)

1963, pp. 25-42. (Tracer experiments on food exchange using labeled food studies were made to determine for *Kalotermes flavicollis* which stages and castes are capable of direct feeding or are receptors of stomodeally or proctodeally given trophallactic food. Pseudoworkers are most effective. Tracer methods were also used to explain the greater longevity and agressiveness of termites when in groups rather than as single individuals. Pseudoworkers were labeled with I^{131} The tracer remained longer in groups. The greater economy in the use of food and other substances may be contributory factor to the "group-effect" in social insects.)

Kurir, A., 1963, pp. 67-70. (For radical control of termites in open places radioactive isotopes in the form of atomic wastes lowered into the ground to a depth of 1-2 mm. where the queens are. By weak doses the gonads of the two sexes could be weakened and fertility reduced. After a few years the populous termite community can be radically destroyed. Precautions outlined for control work.)

McMahan, E. A., 1963, pp. 74-82. (U.S., *Cryptotermes brevis* food exchange relationships by nymphs traced by radioisotopes, soldiers and supplementary reproductives had smaller feeding capacities than nymphs of same weight. Strontium-labeled donors lost a much larger percentage of their nuclide via pellets than cobalt-labeled donors; the strontium tended to be concentrated in the malpighian tubules, the cobalt in the hindgut. It is suggested that the symbiotic protozoa and bacteria concentrated the cobalt. Pellet production at the rate of 0.65 pellet per termite per day, molting caused cessation.)

1963a, pp. 32-34, 36. (U.S., *Cryptotermes brevis,* radioactive tests show how termites feed, food exchange: feed the dependent young and soldiers, distributes the ectohormones affecting caste differentiation, distributes the symbiotic cellulose digesting protozoa. Proctodeal food from the hindgut was the most usual way of exchange. Tracing these habits by radioisotopes permits study of termite activities under relatively natural condition.)

Nakajima, S., Shimizu, K., and Nakajima, Y., 1963, pp. 340-346. (Japan, biological influence of Formosan termites exposed to Co^{60} gamma source. The longevity of the termite was reduced in proportion with the increase of the radiation dosage from 3000 to 12,000 roentgens, but the reduction was not remarkable in the ♀r×♂r and the ♀×♂r exposed to 3000 r. In proportion to the radiation dosage from 3000 r to 12,000 r, the number of the sets depositing eggs as well as the total number of eggs deposited were reduced. The emergence of the soldier

caste in the ♀r×♂r decreased with the increase of the radiation dosage. The degree of the biological influence of the termites exposed to Co^{60} from 3000 r to 12,000 r is in the following order: ♀×♂r<♀×♂<♀r×♂r.)

REARING

AUSAT, A., CHEEMA, P. S., KOSHI, T., PERTI, S. L., and RANGANATHAN, S. K., 1962, pp. 121-125. (Laboratory culturing *Odontotermes obesus,* India, pair of alates in tube with moist soil, also when foraging started colony transferred to larger container with pieces of Semul wood added, maximum duration 947 days. Also termites collected from mound without queen, with sawdust, agar and soil; and with fungus garden added; survived for 3 months, as against 20 days without. Eggs laid 3-4 days after pairing, hatch after 19-21 days, workers appear after 12-14 days.)

BECKER, G., 1965b, pp. 385-398. (Small termite groups can be maintained and observed between glass plates; asbestos cement containers suitable for larger colonies. Some species can be maintained without soil.)

HICKIN, N. E., 1961, pp. 84-86. (England, European, and tropical *Reticulitermes, Cryptotermes,* and *Kalotermes* maintained under controlled conditions in laboratory in tubes, jars, and plates, partially rotted soft woods used for food.)

1963, pp. 267-284. (Britain, rearing termites in laboratory, historical and recent, at Felcourt large general receptacle, battery jar, Jucci-Grassé tube, Lüscher plate-type termitarium.)

SAMPAIO, E. J. F., 1963, pp. 32-41. (Portugal, *Reticulitermes lucifugus,* method rearing colonies 100, 0.4% mortality of colonies, high number reproducing colonies (50%), low cost maintenance in laboratory, 300 colonies (about 30,000 termites kept March 1960 till July 1961.)

SENSKE, W. M., 1966, p. 24. (Washington, Spokane, portable termite colony to boost sales described and illustrated. Cover infested section wood with sheet of tightly glued glass and place in dish of water; one colony lived 9 months.)

RESISTANT PLANTS

RATNASWAMY, M. C., 1961, pp. 341-344. (India, anatomical studies in the Italian millet (*Setaria italica* Beauv.) in relation to termite resistance.)

RESISTANT WOODS, FIBER, PLASTICS

ANONYMOUS, 1960b, pp. 1-6. (Tanganyika, natural durability timbers.)

1960c. (Resistance, West African timbers.)

1962n, p. 81. (Australia, reference to published papers.)

AUSAT, A., CHEEMA, P. S., KOSHI, T., PERTI, S. L., and RANCHANATHAN, S. K., 1962a, pp. 199-202. (Natural resistance woods to *Heterotermes indicola,* India in laboratory, longevity termites in sawdust of woods show great agreement with field trials.)

BECKER, G., 1961, pp. 278-290. (German and Indonesian woods tested in laboratory, termites *Kalotermes flavicollis, Zootermopsis angusticollis, Reticulitermes lucifugus,* var. *santonensis, Heterotermes indicola,* and *Nasutitermes ephratae.* Resistance varied with termite species. *Tectona grandis,* small heartwood *Khaya anthoteca, Diptocarpus* sp., *Cotylelobium melanoxylon, Koompassia malacensis, Shorea* sp., *Shorea stenoptera* resistant, last three failed in case of one termite species each. Resistance differs in different parts stem of wood.)

1963b, pp. 132-145. (Laboratory testing the natural resistance of 14 Indonesian and 7 German species of woods against 5 species of termites from temperate and tropical regions proved that results obtained by tests with one termite species cannot be applied to others.)

COUDREAU, J., FOUGEROUSSE, M., BRESSY, O., and LUCAS, S., 1960, pp. 40-51. (France, new method testing resistance tropical woods to *Reticulitermes lucifugus.* Rapid laboratory tests, criterion loss weight wood and number of termites involved; at beginning and end of test. Average percentage wood destroyed given in parentheses; *Eucalyptus resinifera*

(15.6%), *Distemonanthus benthamianus* (14.2%), *Tarrietia utilis* (11%), *Anopyxis klaineana* (9.6%), *Piptadenia africana* (9.4%), *Tarrietia javanica* (6.6%), *Eucalyptus robusta* (5%), *Afzelia africana* (5%), *Mammea africana* (3.9%), *Guibourtia demeusei* (3.5%), *Chlorophora regia* (2 samples) (3.5%) and (2.8%), *Nauclea diderrichii* (3.4%), *Mansonia altissima* (3%), *Autranella congolensis* (1%), *Lophira alata* (negligible attack). None of the termites survived the test of these woods. Colonies were established in tubes with fragments of wood on a column of damp sand.)

Da Costa, E. W. B., Rudman, P., and Gay, F. J., 1958, pp. 291-298. (Melbourne, Australia, resistance of teak *Tectona grandis* to decay dependent on extractives, as was resistance to *Coptotermes lacteus* and *Nasutitermes exitiosus*, correlation between age of tree and extractive content, most in durable outer heart wood.)

1960, (Relationships of growth factors to the durability of teak.)

1961, pp. 308-319. (Idem.)

Das, N. R., Chandola, L. P., and Ramola, B.C., 1965, pp. 6-12. (India, New Forest, Dehra-Dun, inspection in 1964 of tests on natural durability of timbers in test yard.)

Gay, F. J., 1961, pp. 37-38. (Australia, laboratory studies, pp. 37-38, field studies, p. 38; laboratory testing of 10 Western Australian commercial timbers with *Coptotermes lacteus* now in progress. Field tests of the same woods with *Coptotermes acinaciformis*, *Heterotermes ferox*, and *Microcerotermes implacidus* after 3 years show high susceptibility of *Eucalyptus gomphocephala* and *E. diversicolor*, and high resistance of *E. marginata*, *E. redunca*, and *Acacia acuminata*.)

1962, p. 62. (Field tests after 4 years show high resistance of the above three species of commercial timbers.)

1963c, pp. 71-72. (Australia, laboratory studies, employing *Nasutitermes exitiosus*, *Coptotermes lacteus*, and *C. acinaciformis* show powder bark (*Eucalyptus accedens* has same resistance as wandoo (*E. redunca*) and would be a satisfactory substitute as a pole timber. The Central American *Achras zapota* is almost immune to attack. Polyethylenes with a low melt flow more resistant than with high index. Field tests, employing *Coptotermes acinaciformis*, *Heterotermes ferox*, and *Microcerotermes implacidus*, 10 commercial timbers from Western Australia fall into 4 durability groups; highly resistant: *Acacia acuminata;* resistant: *Eucalyptus redunea*, *E. marginata*, *E. patens;* moderately resistant: *E. guilfoylei*, *E. jacksoni*, *E. astringens;* susceptible to very susceptible: *E. calophylla*, *E. gomphocephala*, *E. diversicolor*.)

1965, pp. 47-48. (Australia, laboratory tests with the same species of termites as used in 1963 showed that plantation-grown cypress pine (*Callitris intratropica*) is as resistant as naturally grown trees. Natural resistance of brigalow, *Acacia harpophylla*, is superior to tallowwood *Eucalyptus microcorys* and equivalent to spotted gum *E. maculata*. Hardboard with 0.025% heptachlor is highly resistant. Airfield lighting cable with polythene sheath and Nylon II jacket immune. Field tests, *Acacia acuminata* and *Eucalyptus redunca* highly resistant to *Coptotermes acinaciformis*, *Heterotermes ferox*, and *Microcerotermes implacidus*, former Western Australian timber after 6 years.)

Gay, F. J., and Wetherly, A. H., 1962, pp. 1-31. (Australia, plasticized polyvinyl chloride, polyethylene and cellulose esters are liable to severe damage by termites; plastics are more liable to attack by species of *Coptotermes* than by *Nasutitermes exitiosus*. Changes in nature and amount plasticizer can improve resistance plasticized polyvinyl chloride and similar improvement can be effected in polyethylene by a change from low to high density material. Thickness important factor in susceptibility but hardness more important, although limiting flexibility. The addition of aldrin or dieldrin might produce toxic hazard. The addition of a nontoxic mineral filler reduces susceptibility without affecting the physical properties of the plastic adversely.)

Holmgren, L., 1963, pp. 1-4. (Resistance Ethiopian timbers to termite attack.)

Hrdý, I., 1961, pp. 41-50. (Czechoslovakia, resistance wood and plastics to *Reticulitermes lucifugus*.)

1961a, pp. 546-556. (Czechoslovakia, *Reticulitermes clypeatus* and *lucifugus* in laboratory in Petri dishes on moist filter

paper and in moist soil, the termites escape after eating through the specimens, a rapid test. None of the specimens can be termed resistant. Field tests at Canton, China (250) days determined *Fraxinus chinensis* the most resistant.)

1961b, pp. 557-565. (Czechoslovakia, *Reticulitermes lucifugus* slightly damaged *Fraxinus chinensis, Machilus* sp., and *Ternstroemia gymnothera,* other woods and plastics tested not resistant.)

1961d, pp. 133-148. (Czechoslovakia, natural resistance timbers.)

Kondo, T., Kurotori, S., Teshima, M., and Sumimota, M., 1963, pp. 125-129. (Japan, the termicidal wood extractive from *Kalopanax septemlobus.*)

Martínez, J. B., 1963, pp. 87-119. (Peninsula, Spanish Guinea, Brazil, list of woods resistant to *Reticulitermes lucifugus;* list of woods resistant to *Cryptotermes brevis,* Canary Islds. Extractives which give wood resistance.)

Ortiz Cespedes, M. R., 1964, pp. 21-22. (Wood (*Pinus radiata*) and wood products exposed to *Calotermes chilensis;* durability particle board.)

Roonwal, M. L., Chatterjee, P. N., and Thapa, R. S., 1962a, pp. 1-3. (India, a proprietary cloth "PAN" Nos. 4, 5, and 6 made of synthetic fiber was tested for 25 months underground at Dehra Dun. The cloth, wrapped about or between blocks of wood, showed more or less full resistance to *Odontotermes assmuthi* and *O. parvidens* up to about 16 months, but thereafter was attacked in varying degrees. "Control" muslin was destroyed within 5 months and plain wood within 16 months.)

Rudman, P., 1959, pp. 112-115. (Australia, some conspicuous phenolic components from extractives in heartwood of eucalypts and their relation to decay resistance.)

1960, pp. 1356-1357. (Australia, anthraquinones of teak (*Tectona grandis.*)

1965, pp. 52-58. (Australia, resistance in *Callitris columellaris,* toxicity wood extractives.)

Rudman, P., and Da Costa, E. W. B., 1959, pp. 33-42. (Australia, variation in extractive content and decay resistance in the heartwood of *Tectona grandis.*)

1960. (Australia, investigations on durability of teak, Asia-Pacific Forestry Commission.)

1961, pp. 10-15. (Australia, variation in the role of toxic extractives in the resistance of durable eucalypts to decay.)

Rudman, P., and Gay, F. J., 1961, pp. 50-53. (Australia, cause natural resistance tallowwood (*Eucalyptus microcorys*) heartwood to attack by *Nasutitermes exitiosus* indicate extractives of major importance, act as repellent, major constituent *cyclo* eucalenol repellent not termiticide, antitermite activity destroyed by saponification.)

1961a, pp. 117-120. (Australia, measurements of antitermite properties of anthraquinones from *Tectona grandis* L. f. by a rapid semimicromethod.)

1963, pp. 21-25. (Australia, a number of anthracenes, anthrones, anthraquinones and xanthones have been tested with *Nasutitermes exitiosus* for antitermitic activity. Many of the substances, while not toxic, act as deterrents. Aurofusarin, which is possibly a naphtoquinonylpyrone, was equally effective.)

1964, pp. 113-116. (Australia, *Coptotermes lacteus,* intraspecific variations in termite resistance to cypress pine (*Callitris columellaris* F. Muell.)

Schultze-Dewitz, G., 1960, pp. 64-68. (Natural resistance of the heartwood of exotic woods to *Reticulitermes lucifugus,* Germany.)

1960a, pp. 365, 367, 413-415, 445-446. (Resistance to *Reticulitermes lucifugus* of woods of various structures and density. Tests of spring and summer wood.)

1961, pp. 29-31. (Differences in the extent of damage by *Reticulitermes lucifugus* and *R. flavipes* to heartwood of *Pinus sylvestris, Picea abies* and *Quercus robur.*)

1963, pp. 24-31. (Laboratory tests of termite-resistant woods *Fitzroya cupressoides* and *Sequoia dendron giganteum* exposed to *Reticulitermes lucifugus* showed that by increasing the number of test organisms (1000 workers) these woods were considerably attacked, Germany.)

1965, pp. 127-134. (Laboratory tests of sapwood and heartwood of Scots pine and Douglas fir using 200 workers of *Reticulitermes lucifugus* indicated that a period of 4 to 6 weeks gave sufficient results. Untreated sapwood of Douglas fir was more resistant even after 8 years

of storage than the heartwood was at the beginning. This difference seems to disappear after 1 month of attack by a wood-destroying fungus, Germany.)

Sen-Sarma, P. K., 1963, pp. 1-10. (India, *Heterotermes indicola* longevity in sawdust from 40 common Indian timbers; deodar, 6 days, laurel, 9; 11-20 days: white cedar, sal, etc.; 21-30 days: toon, teak, etc. Accelerated laboratory tests of 37 common Indian timbers; highly resistant: deodar, sal, teak, etc.; moderately susceptible: toon, laurel, etc.)

1963a, pp. 51-56. (India, *Kalotermes flavicollis* accelerated laboratory tests nine species Indian woods.)

1963b, pp. 57-65. (Europe, methods testing materials.)

Sen-Sarma, P. K., and Chatterjee, P. N., 1965a, pp. 805-813. (India, laboratory tests, qualitative and quantitative, resistance 16 species Indian woods against *Neotermes bosei*.)

Soliman, A. A., 1964, pp. 305-307. (Egypt, *Hodotermes ochraceus,* the susceptible level to both DDT and BHC is low, BHC is more toxic at lower concentrations and is recommended for control.)

REVIEWS AND ABSTRACTS

Chatterjee, P. N., 1961, P. I. (India, review in detail contributions to the systematics of oriental termites, Roonwal and Sen-Sarma 1960. First of a series of entomological monographs to be issued by the Indian Council of Agricultural Research, it is the outcome of taxonomic work at the Forest Research Inst. 1953-1956. There are five articles, out of which two are revision works, new species, a new family, keys, redescriptions of known species and a new term "pseudoworker" to designate immature worker-like individuals who perform the duties of workers in the Kalotermitidae.)

Davies, R. G., 1962, p. 152. (Review: General, growing economic importance termites in tropics, immense biological interest shown in "Termites; their recognition and control," Harris, W. V. 1961. Extensive experience as head of the Colonial Office Termite Research Unit has led to an excellent well-illustrated account of termites, how they affect man's welfare and how to control them.

Ghilarov, M. S., 1961, pp. 393-397. (Review and abstracts of papers on termites in the humid tropics at an international symposium in India in 1960.)

Riley, N. D., 1962, pp. 916-917. (Review: General, termites; their recognition and control. Harris, W. V., 1961. Damage important in tropics; as head of Colonial Office Termite Research Unit, Dr. Harris has specialized experience in biology, morphology, classification and identificaiton. Injury to crops as well as buildings dealt with on a geographical basis, control given.)

Snyder, T. E., 1962, pp. 48, 50. (Abstracts: General, summary of 13 papers on termites presented at the 4th Congress Internatl. Union Study Social Insects, Pavia, Italy, Sept. 9-14, 1961. Subjects: endocrinology, biology, control, damage, resistant woods, protozoa, taxonomy.)

1962a, p. 50. (Review: General, termites; their recognition and control. Harris, W. V. 1961. Damage as world problem, to buildings and products, living crops, lists injurious termites, distribution, habits, detection, and control.)

1963a, p. 13. (Review: Insect factor in wood decay. Hicken, N. E. 1963. Damage by wood-boring insects, especially wood worm in Britain. Legislation in Britain to prevent introduction termites.)

1966a, p. 231. (Review. The termites of the United States. A handbook. Weesner, F. M. 1965. Written for the information of commercial pest control operators, discusses classification, structure, castes, habits and introductions. Data on indoor flights species of *Reticulitermes* on regional basis for 1964 and 1965 with cooperation of 200 operators, keys to species.)

SECRETIONS

Fujii, N., Segawa, M., Ochiai, N., and Shimizu, K., 1962, pp. 7-11. (Japan, distribution of free Amino acids in egg, worker and soldier of *Coptotermes formosanus* by one dimensional ascending paper chromatography. Isolated were leucine, valine, tyrosine, alanine, glutamic acid, serine, lysine, and cystine.)

Herlant-Meewis, H., and Pasteels, J. M., 1961, pp. 3078-3080. (*Calotermes flavicollis,* moulting glands, prothoracic, in all castes; persistency in soldiers.)

Hrdý, and Novák, V. J. A., 1960, pp. 222-225. (Czechoslovakia, exohormone of the queen honeybee and *Kalotermes flavicollis* pseudoergates found nonspecific.)

Lüscher, M., 1959, pp. 161-166. (*Kalotermes flavicollis,* development polymorphism under influence pheromones and factor of nourishment, corpora allata activity determines differentiation of the castes.)

(1960), 1962, pp. 579-582. (Social hormones play an important role in social insects. In termites pheromones are responsible for the differentiation of castes and social regulation, as well as trail marking.)

1961a, pp. 57-67. (Social control of polymorphism, differentiation of castes due to pheromones, the termite colony may be regarded as a superorganism which reacts as a whole to disturbances.)

1962, pp. 1-11. (*Kalotermes flavicollis,* metamorphosis and caste differentiation controlled by hormones. Juvenile and gonadotropic hormones of corpora allata most important; juvenile hormone being responsible for competence and stationary and regressive molts, gonadotropic for soldier differentiation. Hormone-like substances or pheromones are given off by reproductives and probably also by other castes. They circulate within the colony and influence the endocrine system of the larvae and nymphs which receive them. They are responsible for social regulation within the colony while the hormones bring about or inhibit specific determinations within the individual termite.)

1962a, p. 615. (Sex pheromones in the termite superorganism.)

1963a, pp. 1-11. (*Kalotermes flavicollis* full-grown larvae or pseudergates have four different development possibilities at each molt, direction induced by intrinsic environmental factors, if colony regarded as a superorganism. Soldier and alate development seem to be dependent on nutrition. There is strong evidence that pheromones (social hormones) are involved in supplementary reproductive development, probably induced by a massive release of brain hormone in a pseudergate with a high juvenile hormone titer. Caste differentiation controlled chiefly by a mechanism of differential timing of hormone secretions, which itself is regulated by pheromones and nutritional influences.)

1963b, pp. 189-192. (*Zootermopsis nevadensis,* demonstration of a trail pheromone showed how an ether solution of a gland on the 5th sternite brushed on glass would lead this termite to follow a trail.)

1964 pp. 79-90. (*Kalotermes flavicollis,* specific effect of male and female functional replacement reproductives upon transformation of the larvae and 1st stage nymphs into replacement reproductives. Female reproductives always produce a sex-specific inhibitory pheromone, while males only produce a comparable pheromone when in the presence of a female. Single male reproductives have a stimulatory effect upon the transformation of female larvae and nymphs into replacement reproductives.)

Moore, B. P., 1962, pp. 13-15. (Australia, *Nasutitermes exitiosus,* evidence for existence soldier controlling pheromone. Chemistry scent-trail, three component pheromones isolated, others exist in active concentrates. Defensive secretion preponderance unsaturated terpene-like hydrocarbons, 80% of total volatile fraction. Chemical nature coumarin-like substance isolated from haemolymph *Nasutitermes* sp., nasutins appear to be derivatives of ellagic acid and may function as antibiotics in the living insects.)

1962a, pp. 1101-1102. (Australia, coumarin-like substances, nasutins from *Nasutitermes* spp.)

1963, pp. 12-13. (Australia, chemical characterization of scent-trail pheromones of *Nasutitermes exitiosus:* are lipid in nature, show activity as low as 10^{-8} molar in inert solvent. Trails of purified main component are also readily followed by other species of *Nasutitermes* which possess no ventral gland, but are ignored by *Coptotermes lacteus* and similar species, where a prominent ventral scent gland is present. Preliminary analyses of the lipids of *N. walkeri* and *C. lacteus* show neither species to contain the *exitiosus* pheromone although in *N. walkeri* closely related compounds are present. Trail activity of this type may prove to be genus-rather than species-specific. The soldier-defensive secretions of *Nasutitermes* have in *exitiosus,*

walkeri, and *graveolus* terpenoid hydrocarbons, the same four are present in each species although in differing proportions. One of these is an alpha-pinene, a characteristic component of oil of turpentine, and it is likely that other constituents of turpentine are also present in the termite secretions. There appears to be a relationship between these nasutins and the plant metabolite, ellagic acid, which may function as antibiotic.)

1964, pp. 371-375. (Australia, *Nasutitermes* soldiers, as above, alpha-pinene has been identified as a major volatile component of defensive secretions of three species; beta-pinene and other monoterpenoid hydrocarbons also present in significant amounts. Terpenes function largely as solvent-carriers for the resinous constituents of the secretions but may also serve as alarm substances.)

1965, pp. 17-18. (Australia, active main scent-trail pheromone of *Nasutitermes exitiosus natural* concentration in active termites less than one part per million, less during winter. Soldier-defensive-secretions important in biology. Monoterpenoid hydrocarbons wide spread in specialized family Termitidae, alarm pheromones, not present in more primitive families.)

Mosconi, P. B., 1963, pp. 22-28. (Italy, by general staining methods the morphology of the endocrine system of five species of termites in different families has been described comparing it with similar researches on Blattoidea. By histological and histochemical methods for demonstrating the neurosecretion, the tentorial behavior of stomodeal and central nervous system and endocrine organs of some castes of these species have been examined, especially neuter castes of *Reticulitermes lucifugus.* Best results have been obtained by Gomori's chrome-haematoxylin-philoxin method: Gomori positive-material has been found in the cell's cytoplasm of the frontal ganglion, of the proto- and deutocerebrum, of the thoracic and abdominal ganglia. Secretion granules have been observed in corpora cardiaca, and allata- and relative nerves-and in the tentorial (ventral) gland. The same results have been obtained by aldehyde-fuchsin technique. Argentaffine granules are present in the corpora allata.)

Schneiderman, H. A., and Gilbert, L. I., 1964, pp. 325-333. (Several growth hormones appear to be isoprenoid derivatives, and some may act upon the cell nucleus. Insect hormones have been crystallized. There are now known more than a dozen chemicals which can simulate the effects of insect hormones. Findings suggest: ecdysone, juvenile hormone, gonadotropic hormone and perhaps brain hormone may be related chemically; these substances may all be polyisoprenoid derivatives. Some insect hormones are steroids, then either they must be modifying a dietary sterol or different pathways of sterol biosynthesis exist in insects than those reported in microorganisms and mammals.)

Stuart, A. M., 1963, pp. 69-84. (Origin of trail in *Nasutitermes corniger* and *Zootermopsis nevadensis,* odor trails, substance in sternal gland.)

1964, pp. 43-52. (Structure and function sternal gland *Zootermopsis nevadensis,* morphology, histology described, discussed, illustrated, secretion probably a grease passed through the cuticle. When alarmed lays a trail by dragging its abdomen.)

SENSE ORGANS

Abushama, F. T., 1964a, pp. 145-147. (Olfactory receptors on antenna of *Zootermopsis angusticollis.*)

Howse, P. E., 1962, pp. 457-459. (*Zootermopsis angusticollis,* perception of vibration by the subgenual organ, responses recorded from the nerve cord.)

1963, pp. 258-267. (*Zootermopsis angusticollis,* evolution of the production of vibrations as a communication means.)

1963a, pp. 256-268. (*Zootermopsis angusticollis,* several types of vibration movement or jerking behavior by individuals, recognized each occurring under different conditions of stimulation. Main behavior pattern giving rise to substratum vibration and usually audible sound which has been recorded.)

1964a, pp. 409-424. (*Zootermopsis angusticollis,* action potentials deriving from tibial subgenual organ have been recorded from termite nerve cord preparations. The two kinds of cells in the organ,

which are differently disposed, will be set into transient oscillation following their displacement from steady-state conditions. The natural frequency of the two kinds of cell will be different, and for the short time that the transient vibrations last rapidly changing forces will act about the junctions of the two kinds of cell, and these forces could initiate nervous discharges.)

PRESTAGE, J. J., SLIFER, E. H., and STEPHENS, L. B., 1963, pp. 874-878. (U.S., *Reticulitermes flavipes,* thin-walled sensory pegs on antenna worker, most numerous at ends of distal subsegments, described and illustrated.)

SHIELDS

ANONYMOUS. 1962i, p. 14. (U.S., shielding repudiated, had become a racket, in disrepute.)

1964g, p. 3. (U.S., shields effective if properly designed, installed, and inspected, but now in disrepute because improperly installed.)

1964r, pp. 11-, 14-15. (U.S., survey shows shield ineffective, J. B. Cobb, University of Georgia, study in northeast Georgia determines shields as installed in area afford little protection, 310 houses (crawl space) inspected. Lists 1,423 installation defects, 31% improper design; 61% careless installation; interference by service installations after shields in place.)

HAMILTON, J. R., and COBB, J. B., 1964, pp. 1-7. (U.S., Georgia, metal shields in small home construction. Conclusions: as installed in northeast Georgia afford little protection against termites, too many defects, alternate control methods suggested.)

SOIL POISONS, BAITS, DUSTS, REPELLENTS

ALLEN, T. C., ESENTHER, G. R., and LICHTENSTEIN, E. P., 1964, pp. 26-29. (U.S., Madison, Wisconsin, *Reticulitermes flavipes,* dieldrin-concrete mixtures (0.1% and 1.6% wettable powder in waterless toxic), laboratory aging of mixture left a stable residual toxicity. Mixtures that were subjected to outdoor weathering for 22 months were equal in toxicity to newly prepared mixtures. Exposures of 10 species of termites to dieldrin-concrete showed all species affected; the 4 subterranean species were more sensitive than were 5 nonsubterranean species.)

ANONYMOUS. 1962l, p. 24. (U.S., tristate PCO convention Jekyll Island, Ga., Aug. 16-18, new bioassay technique described to measure amount toxicant remains after treatment, and how effective they remain. Will determine whether retreatment is necessary; whether enough chemical is being used; able to determine what happens to termiticides as they are absorbed through the soil in penetration studies.)

1964s, pp. 52, 54, 56. (U.S., on the basis of research conducted by Chisholm, Koblitsky, and Westlake and discussed under Soil Poisons 1962 and 1962a, detailed instructions are given on how to use FHA-developed soil test kit to check termiticide residue.)

ATTFIELD, J. G., 1962, pp. 252-253. (Insecticides.)

BEAL, R. H., and SMITH, V. K., 1964, p. 771. (U.S., Mississippi, granules of aldrin 0.5 pound per 10 feet soil surface, gamma benzene hexachloride 0.9 pound, chlordane 1.0 pound, dieldrin 0.5 pound and heptachlor 0.5 pound all 100% effective after a 5-year exposure. The tests will have to continue longer to determine whether granules are as effective as emulsions.)

BERZAI, L. J., 1964, p. 46. (U.S., Indiana, with colored dyes mixed into termite soil poisons, operators can check on the placement and effectiveness of treatment and see if any movement of chemical occurs after application. Red iron oxide (10 pounds added to each 250 gallons of water emulsion) colors spray light red. Useful in treating water-logged soil; where seepage occurs dye material will have "run." Cost dye 10 cents per pound.)

BROOK, T. S., 1965, pp. 42, 44. (U.S., Mississippi State Univ., studies distribution termiticides in soil in test plots, 6 weeks after treatment dieldrin had moved more than chlordane with greater mortality. Studies of extent of termite feeding on test wooden blocks are being made.)

CASIDA, J. E., 1964, pp. 1011-1017. (Organophosphates and carbamates are used primarily as contact insecticides. Of lower mammalian toxicity and problems of residues and resistance of the chlorinated hydrocarbons will result in a shift to esterase inhibitors for pest control. Listed with formulae are organophosphates including parathion, malathion, diazinon, dichlorvos, tepp, dimethoate, and ronnel; carbamates, including isolan and carbaryl.)

CHATTERJEE, P. N., 1963, p. 148. (India, mixture of BHC (gammexane) and dieldrin has much higher residual effect than these insecticides when used alone.)

CHISHOLM, R. D., KOBLITSKY, L., and WESTLAKE, W. E., 1962, pp. 1-8. (U.S., rapid methods of estimating residues of aldrin and chlordane in soils treated for termites.)

1962a, pp. 48, 50-53, 66. (U.S., methods of estimating residues of aldrin and chlordane in soils treated for termites, both by color and organic chloride analysis.)

COLEMAN, V. R., 1966, pp. 32, 34, 36-38. (U.S., tests of Cecil Series subsoil southern Piedmont Region using fruit fly to assay soils treated with chlordane, aldrin, dieldrin, and heptachlor. Chemicals did not lose their residual effectiveness for 1-, 3-, and 6-month test. Details technique given.)

DECKER, G. C., BRUCE, W. N., and BIGGER, J. H., 1965, pp. 266-271. (U.S., Illinois data are presented to delineate (1) the rate and extent of aldrin conversion to dieldrin and (2) the rate of residue (aldrin+dieldrin) dissipation in soils. It is concluded that under cornbelt conditions the probability that the annual applications of aldrin over a period of 10 years or more will result in accumulations in excess of the annual application rate is remote.)

EBELING, W., and WAGNER, R. E., 1961, pp. 1, 4. (California, field tests, pretreatment for subterranean termite prevention.)

1962, pp. 16, 18, 20. (California, inspections now being made 5 years after treatment using FHA dosages, and methods, (8 insecticides), except no outside trench, instead liquid poured into depression left when form board was removed. Both joist type and slab on ground houses included. Laboratory tests of 10 chemicals in clay loam and fine sand, after 2½ years the treated soil was toxic at very low concentrations. It is more effective to change the carrier than the insecticide, in wet soil use half the volume of water, double the concentration of the insecticide; in dry soil, vice versa.)

FLEMING, W. E., PARKER, L. B., MAINES, W. W., PLASKET, E. L., and MCCABE, P. J., 1962, pp. 1-44. (U.S., residues of chlorinated hydrocarbon insecticides may persist in soil for several years. Comparable results obtained in biological and chemical determinations, but as the insecticides weathered, bioassay appeared more reliable. Amounts of insecticides inactivated varied with type soil, muck most adsorbent inactivated 90%, more attention should be given to nature soil, less insecticide needed for mineral soils; bibliography.)

GAY, F. J., 1961. (Field studies, p. 38. *In* Commonwealth Sci. and Indus. Res. Org., Divis. Ent. 1960-1961 Ann. Rept.) (Australia, Riverina, soil treatment tests, against *Nasutitermes exitiosus,* 0.1% and 0.2% lindane, 1% and 2% chlordane, and tetrachlorbenzene (1:3 in diesel distillate or creosote) have given complete protection for 6 years; against *Coptotermes lacteus,* 0.1% dieldrin and 2% chlordane for 7 years; and 0.1% and 0.2% aldrin and tetrachlorbenzene for 6 years; against a termite complex in the Riverina, 5% pentachlorophenol, 5% sodium pentachlorophenate, 2% chlordane, and creosote for 8 years; while 0.5% lindane, 0.5% aldrin, 0.5% dieldrin, and 1% chlordane have given 5-year protection to date.)

1962, p. 62. (The above tests have proven effective for another year.)

1963a, pp. 1-4. (Australia, soil poison tests in New South Wales at Sutton, Braidwood and Riverina, which vary in soil types, climate and termite fauna, tests described and illustrated. The most effective chemicals are chlordane, aldrin, dieldrin, or lindane for periods of 7-10 years; soil poisoning is the simplest method of protection. Details of protective treatments given.)

1963c, pp. 71-74. (Australia, against *Nasutitermes exitiosus,* 0.2% lindane, 1% and 2% chlordane, and tetrachlorbenzene (1:3 diesel distillate or creosote) have

all given complete protection for 8 years. Against *Coptotermes lacteus,* 2% chlordane has given protection for 9 years, tetrachlorbenzene for 8 years. Against a termite complex in the Riverina, 2% chlordane has been completely effective for 10 years, 0.5% lindane, aldrin, or dieldrin and 1% chlordane has given 7 years of protection so far.)

1965, p. 48. (Australia, field tests against *Nasutitermes exitiosus* 0.5% aldrin 0.5% dieldrin completely effective after 8 years in soil; 1% and 2% chlordane after 10 years; 0.25% and 0.5% heptachlor after 2½ years. Breakdown: Sevin 0.5% after 3 years; 0.25% and 0.5% Thiodan after 5 years; tetrachlorbenzene in diesel oil after 10 years. Against *Coptotermes lacteus* the following are still completely effective: 0.25% and 0.5% heptachlor after 2½ years; 0.5% aldrin after 8 years; and 2% chlordane after 11 years. Breakdown: 0.5% Sevin after 3 years; 0.25% Thiodan after 5 years; and tetrachlorbenzene in creosote after 10 years. Against a termite complex of at least three species in the Riverina 1% chlordane completely effective after 9 years, 2% after 12 years; 0.5% aldrin, dieldrin, and lindane for 9 years.)

Hetrick, L. A., 1962, pp. 270-271. (U.S., Florida, comparative toxicity of DDT, TDE, methoxychlor, BHC (gamma), chlordane, toxaphene, pentachlorophenol, and sodium pentachlorophenate dilutions as soil poisons 15-year test, *Reticulitermes flavipes,* sandy soil. Comparative toxicity 100% knockdown for aldrin, dieldrin, heptachlor dilutions, new organic insecticides superior.)

Johnston, H. R., 1963, p. 27. (U.S., Gulfport, Mississippi, tests begun in 1944 were examined in October 1962, 18-year test, ground-board and stake tests and site described. Aldrin 0.5% (actual) in water emulsion, 100% effective after 13 years; chlordane 1.0% (technical) in water emulsion, 100%, 14 years; dieldrin 0.5% (actual) in water emulsion, 100%, 13 years; heptachlor 0.5% (actual) in water emulsion, 100%, 10 years; benezene hexachloride 0.8% gamma in water emulsion, 100%, 7 years, less than 50%, 12 years; DDT 8.0% (technical) in oil, 100%, 5 years, 90%, 11 years, less than 50%, 14 years.)

1965a, p. 687. (U.S., Gulfport, Mississippi, above tests, environment described, two species *Reticulitermes* involved, chlordane 100% effective after 15 years, aldrin and dieldrin after 14 years, heptachlor after 11 years. Since 1958 granular formulations of these chemicals applied to the surface have been 100% effective. Benzene hexachloride and DDT failed after about 10 years. Protection duration depends to some extent on the quantity of chemical applied; cost chemical small part of total cost of treating a building, false economy to reduce quantity applied.)

Katz, H., 1962, p. 60. (U.S., in pretreatment slabs, treat drain pipes near footing to prevent entrance termites, etc.)

1962a, pp. 44, 46. (U.S., micronized dusts applied in same hole used to inject liquid to the footing, one or two strokes to the opening in wall void, 6% chlordane in microcel or 1% lindane micronized, more effective than solutions.)

1962b, p. 44. (U.S., Pittsburgh, Pennsylvania states that French drains, rockfills of various sizes in a stratified layer on the uphill side of a house, with a trench and drain tile at bottom, last 2 feet covered with soil are a problem. In rodding soil poison goes down drain. Remedy use quick-breaking emulsion which will adhere to rock.)

Lichtenstein, E. P., Schulz, K. R., and Cowley, G. T., 1963, pp. 485-489. (U.S., in laboratory in a silt loam soil inhibition of conversion of aldrin to dieldrin with methylenedioxyphenyl synergists showed sesamex inhibited conversion more than any other; sesamol, a breakdown product of sesamex, did not inhibit it significantly and maize oil increased it.)

Marshall, C. W., 1966, pp. 72, 74, 76. (U.S., rodding techniques for soil poisoning under slabs, vertical drilling, short rodding and long rodding; first method preferred, short rodding more expensive than long rodding.)

Moore, A. D., 1964, pp. 1-3. (U.S., Beltsville, Maryland, aerial test circle in 1963 DDT and DDE residues in soil, after aerial spraying from 1951 through 1958, 5% to 7% DDT and 1.2% to 2% DDE still present in soil in 1963.)

O'Brien, R. E., Reed, J. K., and Fox, R. C., 1965, pp. 14-15, 42, 44. (This study indicated that there were wide differ-

ences in the horizontal and vertical movement of insecticide applied by different injector rods to different types of soil. To be effective the above mentioned conditions must be considered if rods are used.)

Spear, P. J., 1962, pp. 1-3. (U.S., new product development for and by the pest control industry, statistics on size pest control industry 5000 firms, amount business annually 300 million dollars, 7-10% expansion in recent years, 30 million dollars per year market for pesticides, special chemicals for special insects, chlordane and dieldrin most common soil poisons used in termite control.)

U.S. Dept. Agriculture, Forest Service. 1961, pp. 1-8. (U.S., soil treatment, an aid in termite control.)

Wheatley, G. A., and Hardman, J. A., 1960, pp. 423-427. (Bioassay of residues of insecticides in soil.)

Wiese, I. H., 1964, pp. 823-835. (South Africa, five chlorinated hydrocarbons inactivated by soils of different types of texture, in loam soil only half as active, in clay only ⅙ or ⅐ as active as in sand, test termite *Trinervitermes trinervoides.*)

Wolcott, G. N., 1953, pp. 1-5. (Residual effectiveness of insecticides against soil inhabiting insects, aldrin most effective against white grubs in Puerto Rico.)

SOUND

Frings, H., and Frings, M., 1962, pp. 13-20. (U.S., possibilities of use of sound as means of killing insects, too costly, sound fields restricted in extent, animal must be brought to them.)

Haskell, P. T., 1961, pp. 29, 59, 153. (*Leucotermes tenuis* numbers of individuals tap ground in unison at a rate of 10 times per second, hammering with head produces faint drumming noise. If colonies of *Cornitermes similis* are disturbed, soldiers will tap heads on ground and may continue for half a minute. This tapping is rhythmical and in unison and is said to act as a warning to the remainder of the colony. Sound produced by adult as result impact against substrate.)

Howse, P. E., 1963a, pp. 256-268. (*Zootermopsis angusticollis,* vibration movement or jerking behavior give rise to sound as result of impact against substrate, means recognition.)

1964b, pp. 284-300. (*Zootermopsis angusticollis,* significance of sound, apparatus for analyzing patterns of sounds described. The convulsive movement (Vertical Oscillary Movement) is affected by substratum vibration, not by airborne sound; it has the same effect as a warning signal. Elaborate tests indicate that a "language" making use of variations in the sound pattern could not be expected in *Z. angusticollis.*)

SUPERORGANISM

Lüscher, M., 1961a, pp. 57-67. (Termite colony may be regarded as a superorganism which reacts as a whole to disturbances.)

TAXONOMY

Ahmad, M., 1963, pp. 395-399. (Thailand, *Indotermes thailandis* n. sp. soldier holotype, workers, Tung Sa-Lang Luang Natl. Park, Pitsanulok Prov. *Indotermes* does not deserve a family rank, belongs to subfamily Amitermitinae, family Termitidae, very closely related to *Speculitermes.*)

1965, pp. 1-114. (Thailand, 74 species recorded, 29 genera, 32 new species described; holotypes in Dept. Zool., Univ. Panjab, Lahore, Pakistan, paratypes in A.M.N.H. Lists of localities and species and keys to genera and species, imagos and soldiers included. Species figured; known species redescribed, figured.

Postelectrotermes tongyaii n. sp., imago holotype, Ka-Chong. *Glyptotermes kachongensis* n. sp., soldiers holotype and paratype, Ka-Chong. *Cryptotermes thailandis* n. sp., soldier holotype, imago morphotype, Klang Dong. *Coptotermes premarasmii* n. sp., soldier holotype, imago morphotype, Ka-Chong. *Prorhinotermes tibiaoensiformis* n. sp., soldier holotype, Wang Nok An. *Schedorhino-*

termes rectangularis n. sp., major and minor soldiers holotype, worker morphotype, Chantaburi. *Macrotermes chaiglomi* n. sp., major soldier holotype, minor soldier morphotype, 20 km. east of Mae Sod on road to Tak. *M. maesodensis* n. sp., soldiers major and minor holotype, workers morphotype, 20 km. east of Mae Sod on road to Tak. *Odontotermes maesodensis* n. sp., soldier holotype, imago morphotype, 20 km. east of Mae Sod on road to Tak. *O. proformosanus* n. sp., soldier holotype, king morphotype, Ka-Chong. *O. paraoblongatus* n. sp., soldier holotype, Muaek Lek. *O. takensis* n. sp., soldier holotype, Tak. *Hypotermes makhamensis* n. sp., queen, soldiers holotype, paratypes, king morphotype. Muaek Lek. *Speculitermes macrodentatus* n. sp., soldier holotype, queen morphotype. Tung sa-lang Luang Natl. Park. *Microcerotermes minutus* n. sp., soldier holotype, imagoes morphotypes. Wang Nok An. *M. paracelebensis* n. sp., soldier holotype, imagoes morphotypes. Ka-Chong. *Amitermes longignathus* n. sp., soldier holotypes, paratypes. Huay Yang. *Havilanditermes proatripennis* n. sp., soldier holotype, imago morphotype. Ka-Chong. *Nasutitermes tungsalangensis* n. sp., soldier holotype, imago morphotype. Tung Sa-Lang Luang. *N. dimorphus* n. sp., major soldier holotype, minor soldier morphotype. Kan Tang. *N. perparvus* n. sp., soldiers holotype, paratype. Wang Nok An. *Bulbitermes makhamensis* n. sp., soldiers holotypes, paratypes. Makham. *B. parapusillus* n. sp., soldier holotype, imago morphotype. Prew. *B. laticephalus* n. sp., soldier holotype, imago morphotype. Tung Sa-Lang Luang. *Termes huayangensis* n. sp., soldier holotype, imago morphotype. Huay Yang. *Mirocapritermes latignathus* n. sp., soldiers holotype, paratypes. Ka-Chong. *M. concaveus* n. sp., soldiers holotype, paratype. Khao Yai. *M. prewensis* n. sp., soldiers holotype, paratypes. Prew. *Dicuspiditermes makhamensis* n. sp., soldier holotype, queen morphotype. Makham. *Procapritermes prosetiger* n. sp., soldiers holotype, paratypes, Ka-Chong. *P. longignathus* n. sp., soldier holotype. Tung Sa-Lang Luang. *Pseudocapritermes parasilvaticus* n. sp., soldier holotype, dealate morphotype. Tung Sa-Lang Luang.)

ARAUJO, R. L., 1961, pp. 105-111. (Brazil, *Dihoplotermes inusitatus* n. sp., major and minor soldier, imago; major soldier holotype; Morumbia; near *Cornicapritermes*. First case of two types (dimorphic) soldiers in Termitinae.)

BANKS, F. A., 1946, pp. i-iii, 1-28. (U.S., distinction of species in *Reticulitermes*, list of species, distribution of genus, keys to species of eastern United States, descriptions, measurements, diagrams, illustrations.)

BEI-BIENKO, G. YA., 1964, pp. 174-176. (SSSR, European part, key to Kalotermitidae and Rhinotermitidae, with their included genera and species.)

BOUILLON, A., and MATHOT, G., 1965, pp. 1-115. (Africa, catalog, 613 species in Africa. Keys to families, genera systematic discussion, measurements and indices, variation, morphology soldiers. Names and numbers African genera and species. A series of 25 plates gives detailed morphological drawings of African termites.)

CHATTERJEE, P. N., and SEN-SARMA, P. K., 1962a, pp. 822-826. (Burma, *Odontotermes paralatigula* n. sp., soldier, holotype, Hlegu Range, Insein Forest Divis.)

CHATTERJEE, P. N., and THAKUR, M. L., 1963, pp. 171-203. (Indo-Malayan Region, revision genus (*Hypotermes* (Termitidae:Macrotermitinae), redescriptions *Hypotermes nonpriangi* Roonwal and Sen-Sarma, soldier, worker, Assam; *obscuriceps* (Wasmann), imago, soldier, worker, figured, variations in soldier and worker castes figured. Ceylon, South India; *sumatrensis* (Holmgren), soldier, worker figured, East Sumatra; *winifredi* (Ahmad), imago, soldier figured, Ceylon; *xenotermitis* (Wasmann), soldier, worker figured, Burma.)

1964, pp. 1-6. (India, Kashmir, *Microcerotermes rambanensis* n. sp. soldier holotype, worker morphotype, Maitra Forest, Ramban, India. Types Forest Research Institute, Dehra Dun, India.)

1964a, pp. 7-16. (India, redescription *Odontotermes gurdaspurensis* Holmg. and Holmg., imago, soldier, major and minor workers, described and figured, mostly from Gurdaspur, Punjab.)

1964b, pp. 149-162. (India, Kulu Valley, Punjab, *Sarvitermes faveolus* gen. et sp. nov., family Stylotermitidae, described and figured, soldier holotype, imago and

worker morphotype, Kulu Saw Mills, Sarvari Village, types in Natl. collection, Zoological Survey of India, Calcutta. Relationship family Stylotermitidae discussed, key to the genera.)

1964c, pp. 348-353. (North India, *Angulitermes akhorisainensis* n. sp. imago, soldier, worker, Termitinae. Characters given to separate from *A. dehraensis* (Gardner) and *A. acutus* Mathur and Sen-Sarma. *A. akhorisainensis* n. sp., all castes described and figured. Soldier holotype, imago, and worker morphotype from Uttar Pradesh, Akhorisan block. Types of Natl. Zoological coll., Zoolog. Survey India, Calcutta.)

1964d, pp. 219-260. (Revision genus *Microtermes* Wasmann from the Indian region, genus and species redescribed and figured. Key to species, list of species; map of world to show geographical distribution *Microtermes*.)

Chatterjee, P. N., and Thapa, R. S., 1963, pp. 20-26. (India, Madras, *Beesonitermes* n. gen., *topslipensis* n. sp., soldier type species, holotype, workers paramorphotypes, Mt. Stuart, Top Slip, Madras.)

1964, pp. 210-214. (India, *Grallatotermes niger* n. sp., soldier, holotype, worker, morphotype, Mt. Stuart Block, Top Slip, Madras.)

1964a, pp. 514-516. (India, *Speculitermes chadaensis* n. sp., worker holotype, Chada, South Mandla Forest Divis., Madhya Pradesh. Imago and soldier unknown, Termitidae, Amitermitinae.)

Chiaromonte, A., 1964, pp. 114-116. (Discussion of gender of name *Termes;* species previously described, with neutral specific names need to be revised since *Termes* is a female genus.)

Coaton, W. G. H., 1962b, pp. 114-156. (South Africa, Kruger Natl. Park, *Fulleritermes* gen. nov. type species *contractus* Sjöstd., pp. 151, 152, figs. 11, 12, list of species formerly in *Coarctotermes* Holmgren, imago-worker mandible diagnosis, pp. 153, 154, fig. 12.)

Connecticut University College of Agriculture Extension Serv., 1964, p. 1. (U.S., Connecticut, differences between termite and ant.)

Emerson, A. E., and Banks, F. A., 1965, pp. 1-33. (The structure, relationships, phylogeny, distribution, origin, nests, ecology, and associated termitophiles of the South American termite genus *Labiotermes* are described and discussed. *L. labralis* (Holmgren) and *L. longilabius* (Silvestri) are redescribed and figured. *L. brevilabius,* n. sp. from Brazil and *L. pelliceus,* n. sp. from British Guiana are described and figured. A map showing the localities for each species and a key to the known species of imagoes and soldiers are included. *Labiotermes brevilabius* n. sp., soldier holotype, Novo Horizonte. Brazil, morphotype female imago, São Paulo, Brazil. *L. pelliceus* n. sp., soldier holotype. Itabu Creek, British Guiana. Types in Amer. Mus. Nat. Hist.)

Ernst, E., 1963, pp. 276-279. (Tanganyika, Africa *Pseudacanthotermes* spp. biology, nests, keys to soldiers *grandiceps, militaris, spiniger*.)

1964, pp. 173-178. (Ibid., *P. laticeps* placed as variety of *militaris,* new distribution records.)

Gay, F. J., 1963, pp. 421-423. (New Guinea, *Coptotermes hyaloapex* Holmgren is synonym of *C. elisae* (Desneux), widely distributed throughout the island, seriously damages living trees and shrubs and timber in service.)

Grassé, P. P., and Noirot, C., 1961, pp. 311-359. (Africa, comparison *Bellicositermes goliath* imago, major soldier with *B. bellicosus, B. bellicosus rex,* var. nov., *B. bellicosus jeanneli,* geographical variations.)

Harris, W. V., 1961, pp. 1-187. (Africa, tropics identification winged and soldier, illustrated.)

1962d, pp. 311-318. (Africa, map distribution *Angulitermes,* list world species, measurements soldiers of *A. braunsi, elsenburgi, frontalis,* and imago and soldier of *nilensis* n. sp. and *truncatus* given. *A. nilensis* alate female holotype, soldier morphotype, Sudan, Khartoum, Burri Woods. *A. dehraensis* and *obtusus* from India and *hussaini* from W. Pakistan are the other species.)

1963a, pp. 1-43. (Africa, Congo, Garamba Natl. Park, Guinean savanna, *Basidentitermes demoulini* n. sp., soldier holotype, Garamba; *Pericapritermes desaegeri* n. sp., soldier holotype, Garamba; *Promirotermes pygmaeus* n. sp., alate male holotype, soldier morphotype, Garamba; *Odontotermes garambae* n. sp., alate female holotype, soldier morphotype, Garamba. Holotypes in Inst. Pares Nat. Congo, paratypes Brit. Mus.)

1964, pp. 171-172. (Israel, *Angulitermes quadriceps* n. sp., soldier holotype, Sodom area, type in Brit. Mus., Nat. Hist. Species compared with *A. nilensis*, figured.)

1964b, pp. 479-481. (Saudi Arabia, *Microtermes najdensis*, n. sp. soldier holotype, Riyadh on citrus, further record, Mecca. British Museum.)

1965a, pp. 10-18. (Western Congo, 21 species Termitidae listed, one new species Termitinae, *Unguitermes bouilloni*, soldier holotype, Takundi, R. Kwango.)

1966, pp. 11-17. (Malaysia and South Africa, list of type localities of Isoptera described by Haviland.)

HELFER, J. R., 1963, pp. 63-80. (North America, how to know termites, keys to winged adults and soldiers with notes on distribution and habits.)

HRDÝ, I., 1961c, pp. 97-107. (European species *Reticulitermes clypeatus, lucifugus* and *lucifugus santonensis* separated by morphological and biological differences.)

HSIA, KAI-LING, and FAN, SHU-TEH, 1965, pp. 360-382. (China, eight species and one subspecies, keys based on soldiers and winged, including table, p. 381 for Chinese species. Described and figured are: *Reticulitermes grandis* n. sp., soldier holotype, Yunnan; Chinping; *R. affinis* n. sp., soldier holotype, Fukien: Nanping, also winged; *R. chinesis leptomandibularis* n. sp. soldier holotype, Fukien: Yungan, also winged; *R. labralis* n. sp., soldier holotype, Shanghai; also winged; and *R. curvatus* n. sp., soldier holotype, Chekiang: Kingyuan. All types in East China Entomological Institute, Academia Sinica.)

KRISHNA, K., 1961, pp. 303-408. (World, Kalotermitidae, generic revision, fossil genus *Eotermes* removed, placed in Hodotermitidae, new genera, new species, phylogeny, list of protozoa symbiotic in Kalotermitidae. *Postelectrotermes* n. gen., type species *praecox* (Hagen), Baltic amber, E. Prussia, Upper Eocene. *Ceratokalotermes* n. gen., type species *spoliator* (Hill), Federal Capital Territory, Australia, *Comatermes* n. gen., type species *perfectus* (Hagen), locality unknown. *Incisitermes* n. gen., type species *schwarzi* (Banks), Paradise Key, Fla. *Allotermes* Wasmann, type species *paradoxus* Wasmann, S.W. Madagascar. *Marginitermes* n. gen., type species *hubbardi* (Banks), Sabino Canyon, Santa Catalina Mountains, Arizona. *Tauritermes* n. gen., type species *taurocephalus* (Silvestri), Brazil, Corumbà. *Proneotermes* Holmgren, type species *perezi* Holmgren, Costa Rica. *Bifiditermes* n. gen., type species *madagascariensis* (Wasmann), Nossibé, Madagascar. *Bicornitermes* n. gen., type species *bicornis* Krishna n. sp., Camp Putnam, on Epulu River, Congo, soldier holotype, winged morphotype. *Epicalotermes* Silvestri, type species *aethiopicus* Silvestri. A list of the genera and new combinations are included.)

1962, pp. 1-13. (Mexico; *Calcaritermes colei* n. sp. soldier holotype near El Naranjo, San Luis Potosi; *C. rioensis* n. sp. soldier holotype, Ilha Grande, state of Rio, Brazil; *C. snyderi* n. sp. imago morphotype, soldier holotype, El Salvador, Volcan de Santa Ana, Dept. Santa Ana; *C. temnocephalus* Silvestri imago morphotype, Maracas Valley, Trinidad, West Indies.)

1962a, pp. 1-25. (*Allotermes denticulatus* n. sp., soldiers holotype and paratype, Madagascar, 39 kilometers east of Tsihombe; *A. papillifer* n. sp., soldiers holotype and paratype, dealate morphotype, Madagascar, 8 kilometers south of Mahabo. *Bicornitermes emersoni* n. sp., soldier holotype, Africa, Congo, Leopoldville. *Epicalotermes planifrons* n. sp., soldiers holotype and paratype, queen and king morphotype and paramorphotype, Madagascar, 15 kilometers southeast of Tuléar. *Procryptotermes corniceps* (Snyder), species originally described from Puerto Rico redescribed from specimens from Jamaica; *P. falcifer* n. sp., soldiers holotype and paratype, imagos morphotype and paramorphotype, Mauritius Isld., Réunion Isld., 1 mile east of Port de Galles; *P. krishnae* Emerson imago morphotype described for first time, Noumea, New Caledonia; *P. speiseri* N. and K. Holmgren, soldier in Museum Basel redescribed from Emerson's notes, Ambryn, New Hebrides.)

1963, pp. 1-22. (Africa, *Foraminitermes tubifrons* Holmgren winged redescribed, soldier described, Lolodorf, Cameroon; *F. coatoni* n. sp. described, soldier holotype, winged morphotype, Kalina Woods. Leopoldville, Congo; *F. corniferus* (Sjöstedt) n. comb., soldier redescribed, Mukimbungu; *F. harrisi* n. sp., soldier,

holotype, Keyberg; *F. rhinoceros* (Sjöstedt) n. comb., soldier redescribed, Mukimbungu, *F. valens* (Silvestri) n. comb., dealate imago described, soldier redescribed, Mamou, Guinea. *Ceratotermes* regulated to synonomy. Keys to soldiers.)

1963a, pp. 202-209. (Evolution family Kalotermitidae, Isoptera, primitive in its morphology, nesting behavior, social organization. Consists of a number of living genera which have existed since Cretaceous times. The transitional forms in the phylogenetic sequence have persisted, so that there are living fossils or connecting links between many genera. Included are 354 living and fossil species under 24 genera. Eight are new: *Postelectrotermes, Ceratokalotermes, Comatermes, Incisitermes, Marginitermes, Tauritermes, Bifiditermes,* and *Bicornitermes.* The genera *Proneotermes, Pterotermes, Allotermes,* and *Epicalotermes* are resurrected.)

1965, pp. 1-34. (Burma, two families of termites are found in Burma, the Rhinotermitidae and the Termitidae. This study brings the total valid reported spp. to 39, grouped into 20 genera. Out of the 39 spp., 21 are reported in this paper. In the present paper one new genus, *DICUSPIDITERMES,* is described, with *Capritermes obtusus* Silvestri as its type species. Ten spp. previously included in the genus *Capritermes* are transferred to *Dicuspiditermes.* Two of these spp. *D. garthwaitei* (Gardner) and *D. laetus* (Silvestri), are from Burma. Six new spp., *Microcerotermes uncatus, Angulitermes paanensis, Angulitermes resimus. Mirocapritermes valeriae, Bulbitermes prabhae,* and *Aciculitermes maymyoensis,* are described and illustrated. The imago of *Euhamitermes hamatus* is described for the first time. Two spp. previously described under the names *Capritermes semarangi* Holmgren and *Capritermes tetraphilus* Silvestri are now transferred to *Pericapritermes semarangi* (Holmgren), new combination, and *Pericapritermes tetraphilus* (Silvestri), new combination. The following 10 spp. and 9 forms and spp. have been relegated into synonymy: *Globitermes audax* Silvestri, *Microcerotermes burmanicus* Ahmad, *Capritermes orientalis* Mathur and Sen-Sarma, *Macrotermes azarellii* (Wasmann), *Odontotermes assamensis* Holmgren, *Odontotermes bangalorenis* Holmgren, *Odontotermes orissae* (Snyder), *Hypotermes nongpriangi* Roonwal and Sen-Sarma, *Microtermes pallidus* (Haviland), *Microtermes umsae* Roonwal and Chhotani, *Macrotermes gilvus* f. *angusticeps* Kemner, *Macrotermes gilvus* var. *borneensis* Kemner, *Macrotermes gilvus* f. *kalshoveni* Kemner, *Macrotermes gilvus* f. *latinotum* Kemner, *Macrotermes gilvus* subsp. *madurensis* Kemner, *Macrotermes gilvus* subsp. *malayanus* (Haviland), *Macrotermes gilvus* f. *padangensis* Kemner, *Macrotermes gilvus* f. *philippinensis* (Oshima), and *Odontotermes obesus* var. *oculatus* Silvestri. The genus *Angulitermes* and four spp., *Euhamitermes hamatus, Pericapritermes semarangi, Odontotermes hainanensis,* and *Microtermes obesi,* are reported here for the first time from Burma. List of species of Burma. *Microcerotermes uncatus* n. sp., soldier holotype, Maymyo; *Angulitermes paansis* n. sp., soldier holotype, Yegaw, Pa-an, Karen State, *A. resimus* n. sp., soldier holotype Maymyo; *Microcapritermes valeriae* n. sp., soldier holotype, Maymyo; *Dicuspiditermes* n. gen. *Capritermes obtusus* Silvestri type species; *Bulbitermes prabhae* n. sp., soldier holotype, Maymyo; *Aciculitermes maymyoensis* n. sp., soldier holotype, Maymyo. All types in Amer. Mus. Nat. Hist., New York.)

Krishna, K., and Emerson, A. E., 1962, pp. 1-65. (Papuan: *Glyptotermes guamensis* n. sp., soldier holotype, Yigo, Guam; *G. lighti* n. sp., imago, Marshall Islds., morphotype, soldier holotype; *G. nissanensis* n. sp., soldier holotype, Nissan Isld., Green Islands; *G. palauensis* n. sp., imago, Koror Isld., Palau Islands, morphotype, soldier holotype; *G. schmidti* n. sp., soldier holotype, Hog Harbor, Espiritu Santo Isld., New Hebrides. Oriental: *G. concavifrons* n. sp., dealate, Bandjar, Seng-kong VII, West Java, morphotype, soldier holotype; *G. kirbyi* n. sp., imago, swamp forest of Kateman, east coast southern Sumatra, soldier holotype. Ethiopian: *G. hendrickxi* n. sp., soldier holotype, Tchibinda Forest on Mt. Bukulumusa above Mulungu, Congo; *G. jurioni* n. sp. imago, Yangambi, Congo, morphotype, soldier holotype; *G. longuisculus* n. sp., imago, 28 miles south of Rutshuru, Congo, mor-

photype, soldier holotype; *G. parki* n. sp., dealate female, Kakitumba, Ruanda-Urundi, Congo, morphotype, soldier holotype; *G. sinomalatus* n. sp., dealate Camp Putnam, Epulu River, Congo, morphotype, soldier holotype. Neotropical: *G. adamsoni* n. sp. imago, near Arima, Trinidad, W. Indies, morphotype, soldier holotype; *G. contracticornis* (Snyder) imago, morphotype San José, Costa Rica; *G. longipennis* n. sp., imago holotype, San Antonio, Colombia; *G. parvoculatus* n. sp., imago, Trinidad, W. Indies, morphotype, soldier holotype; *G. rotundifrons* n. sp., Barro Colorado Isld., Panama Canal Zone, morphotype, soldier holotype; *G. seeversi* n. sp., imago, Cordoba, Veracruz, Mexico, morphotype, soldier holotype; *G. sicki* n. sp., imago (dealate), Ilha Grande, Rio de Janeiro, Brazil, morphotype, soldier holotype; *G. truncatus* n. sp., imago. Porcecito, Colombia, morphotype, soldier holotype; *G. tuberifer* n. sp., imago, Sandy Bay. St. Vincent Island, West Indies, morphotype, soldier holotype.)

KUSHWAHA, K. S., 1962, pp. 55-62. (India, taxonomic differentiation based on bristles on oral appendages and thoracic tergites of *Odontotermes (O.) obesus, assmuthi* and *horni,* soldiers and workers.)

MATHUR, R. N., and SEN-SARMA, P. K., 1961, pp. 1-4. (Burma, *Capritermes orientalis* n. sp., soldier, Maymyo.)

1962a, pp. 7-12. (India, *Odontotermes assmuthi,* winged described.)

MATHUR, R. N., and THAPA, R. S., 1961, pp. 3-7. (South India, *Pseudocapritermes fontanellus* n. sp., soldier holotype, worker morphotype, Forest Res. Inst., Dehra Dun, type locality So. India, Top Slip, Madras.)

1962, pp. 49-52. (India, Termitidae. Nasutitermitinae: *Ampoulitermes* n. gen., type *A. wynaadensis* n. sp., holotype: soldier, morphotype: worker; paratypes, Forest Research Inst., Dehra Dun; type locality: South India: Periyar R. F. (Reserve Forest); Wynaad, Madras.)

1962a, pp. 370-375. (India, Termitinae, *Microcapritermes* n. gen., type *pilosus* n. sp. soldier, worker Madras.)

1962b, pp. 4-8. (India, Stylotermitinae, *Stylotermes chakratensis* n. sp. holotype soldier, morphotype worker, Uttar Pradesh, Chakrata, type Forest Research Inst., Dehra Dun.)

1962c, pp. 1-122. (India, Forest Research Institute, Dehra Dun, revised catalog Isoptera (white ants) of Entomological Reference Collection.)

NUTTING, W. L., 1965a, pp. 1-5. (U.S., Southwest, northern Mexico, descriptions and field keys winged and soldiers seven most important species.)

PRASHAD, B., and SEN-SARMA, P. K., 1959, pp. 1-66. (Indian region, list 20 species, revision *Nasutitermes,* distribution. Keys to species, imago, soldier castes, *N. anamalaiensis* Snyder, India, soldier, worker redescribed,; *N. beckeri* n. sp., imago, soldier, worker, soldier holotype, worker morphotype, India, Western Ghats, Neriamangalam; *N. brunneus* Snyder, India, imago, soldier redescribed; *N. ceylonicus* (Holmgren), Ceylon, imago, soldier, worker redescribed; *N. crassicornis* (K. and N. Holmgren), India, soldier, worker redescribed; *N. emersoni* Snyder, India, soldier, worker redescribed; *N. fletcheri* (K. and N. Holmgren), India, soldier, worker redescribed; *N. gardneri* Snyder, India, soldier, worker redescribed; *N. horni* (Wasmann), Ceylon, soldier, worker, original description; *N. indicola* (K. and N. Holmgren), India, soldier, worker redescribed; *N. jalpaigurensis* n. sp., soldier, worker, soldier holotype, worker morphotype, India, West Bengal, Teesta Forest Divis.; *N. lacustris* (Bugnion), Ceylon, imago, soldier, worker redescribed; *N. matangensis* (Haviland), North Borneo, Sarawak, imago, soldier, worker redescribed, form *matangensiodes* (Holmgren) valid form; *N. matangensis matangensiformis* (Holmgren), North Borneo, Sarawak, imago, soldier, worker redescribed; *N. moratus* (Silvestri), India, Abor, soldier, nymph, original description; *N. oculatus* (Holmgren), Ceylon, imago, soldier, worker redescribed; *N. processionarius* (Schmitz), India, Western Ghats, Navoor, soldier, worker redescribed; *N. roboratus* (Silvestri), Lower Burma, Moulemin, *N. thanensis* n. sp., soldier, worker, soldier holotype, worker morphotype, India, Dehra Dun, Thano; *N. suknensis* n. sp., soldier, soldier holotype, India, West Bengal, Sukna.)

1960, pp. 1-32. (Indian region, revision *Hospitalitermes,* description, 25 of 26 species occur in Oriental region, 1 in Papuan, relationships. Descriptions of

H. ataramensis n. sp., soldier, worker, major, minor, soldier, holotype, workers morphotypes, Burma: Pokabo Reserve (Ataram); *H. blairi* Roonwal and Sen-Sarma soldier, workers, Andaman Islds. *H. birmanicus* Snyder, soldier, Burma: Hsipaw. *H. brevirostratus* n. sp., soldier, holotype, Burma: Maymyo. *H. jepsoni* Snyder, soldier, workers, major, minor, Burma: Kaing Range, Pyinmana. *H. madrasi* Snyder soldier, workers, major, minor, India, North Vellore (Madras). *H. monoceros* (Koenig), imago, soldier, workers, major, minor. Ceylon.)

Roonwal, M. L., 1962a, pp. 31-50. (Recent developments in termite systematics, 1949-1960, history world from 1779, classification and phylogeny, soldier caste in *Speculitermes,* morphology, zoogeography, lists new genera and species since 1949, and new species and authors from geographical regions, bibliography.)

1964, pp. 69-75. (Measurements and indices, with the aid of precisely defined measurements, exact comparisons can be made between allied taxa. List of references.)

Roonwal, M. L., and Bose, G., 1961, pp. 580-594. (India, *Odontotermes bellahunisensis* Holmg. and Holmg, Mysore, redescribed, new subsp. *guptai* described, soldiers and workers from Rajasthan.)

1962, pp. 151-158. (India, Rajasthan, African genus *Psammotermes* in Indian fauna, fuller description *P. rajasthanicus,* soldier and worker.)

1964, pp. VI + 58. (India, Rajasthan, 19 species and subspecies in 12 genera and 3 families recorded, 3 new subspecies described and figured. *Microcerotermes tenuignathus laxmi* n. subsp. soldier holotype worker morphotype, Kolayat, Bikaner Dist. *Microcerotermes championi raja* n. subsp. soldier holotype, worker morphotype, Balsamand, Jodhpur Dist. *Odontotermes brunneus kushwahai* n. subsp. soldier holotype, worker morphotype, Bhupalsagar, Udaipur Dist. All types deposited in National Zoological Collections, Zoological Survey India, Calcutta. Keys to differentiate soldiers of new subspecies given.)

Roonwal, M. L., and Chhotani, O. B., 1962, pp. 57-63. (India, new species and subspecies *Speculitermes deccanensis deccanensis,* worker, Bababudin Hills, Mysore; *S. deccanensis paivai,* "Madhupur Bengal" (Bihar.).)

1962a, pp. 308-316. (Burma, Rangoon, *Macrotermes gilvus malayanus* mound builder, soldier major, minor, worker major, minor; king; physogastric queen; eggs; nymphs.)

1962b, pp. 281-406. (India, Assam, region described, 34 species described, 13 new species or subspecies, keys given. New species are:

Reticulitermes saraswati n. sp., soldier, holotype, worker major and minor, morphotypes, type locality Shillong, Assam; *Speculitermes cyclops rongrensis* n. subsp., worker, holotype, Rongrengiri, Assam; *Pseudocapritermes tikadari* n. sp., soldier, holotype, worker, morphotype, Cherrapungi, Assam; *Capritermes latignathus durga* n. subsp., soldier, holotype, worker, morphotype, Cherrapungi, Assam; *Macrotermes khajuriai* n. sp., major soldier, holotype, morphotypes, minor soldier, worker, Umsa Nongkharai, Assam; *Odontotermes giriensis,* holotype, soldier, morphotypes, major and minor workers, Rongrengiri, Assam; *O. horae* n. sp., holotype, soldier, morphotype, worker, Nong-Priang stream, Assam; *O. kapuri* n. sp., holotype, soldier, morphotype, worker, Cherrapungi, Assam; *Microtermes imphalensis* n. sp., holotype, imago, Imphal Valley, Manipur, eastern India; *M. umsae* n. sp., holotype soldier, morphotypes, major and minor workers, Umsa Nongkharai, Assam; *Nasutitermes cherraensis* n. sp., holotype, major soldier, morphotypes, minor soldier, worker, Cherrapungi, Assam; *N. garoensis* n. sp., holotype, soldier, morphotypes, major and minor workers, Rongrengiri, Assam; *N. kali* n. sp., holotype, soldier, morphotypes, major and minor workers Umsa Nongkharai, Assam.)

1962d, pp. 1-115. (Indian region, eight species *Coptotermes* described and illustrated, including one new species *C. kishori,* soldier holotype, worker morphotype, Berhampur, West Bengal, India; keys to winged and soldiers.)

1962e, pp. 159-168a. (India, Assam, new Neotropical element *Anoplotermes; A. shillongensis,* worker holotype, Shillong.)

1963a, pp. 265-273. (India, *Procryptotermes dhari* n. sp., soldier holotype, pseudoworker morphotype, Coimbatore, Madras.)

1964, pp. 45-52. (India, *Odontotermes*

mathadi n. sp., soldier holotype, worker morphotype, Badani, Bijapur Distr., Mysore, described and figured, *obesus* group, but largest; *Odontotermes meturensis* R. and C. imago described and figured, from Bangalore southern India with soldiers and workers.)

1964a, pp. 120-130. (India, *Speculitermes dharwarensis* n. sp., imago dealate female holotype, morphotype worker, Dharwar, Mysore State, close to *S. cyclops cyclops, S. goesswaldi* n. sp., holotype imago dealate female, morphotype worker, Dharwar, Mysore State, comparison with other species, types deposited in Zoological Survey of India, Calcutta.)

ROONWAL, M. L., and MAITI, P. K., 1965, pp. 255-261. (India, *Postelectrotermes bhimi* n. sp. soldier holotype, pseudoworkers paratypes, Vendiperiyar village, Kerala State, types in Natl. Zool. Coll., Zool. Survey of India, Calcutta.)

ROONWAL, M. L., and SEN-SARMA, P. K., 1960, pp. 1-420. (I. Systematics of Oriental termites No. 4. A new species of *Synhamitermes* Holmg. from Ceylon and the imago of *S. quadriceps* (Wasm.) (Termitidae: Amitermitinae, pp. 1-14, figs. 1-5, tables I-II. *S. colombensis* n. sp., soldier holotype, Colombo, (West Province, Ceylon); *S. quadriceps* (Wasm.) imago, India; key to separate *S. quadriceps* and *S. ceylonicus* (Holmg.) imagos.) (II. No. 5. New and little-known species of the genera *Speculitermes, Capritermes* and *Odontotermes*, pp. 15-39, figs. 6-10, pls. I-VI, tables III-IX. *Speculitermes cyclops cyclops* Wasm. redescribed, India; *S. cyclops sinhalensis* n. subsp., worker holotype Ceylon, Vavuniya, (North Province); *S. triangularis* n. sp., worker holotype, India, Dehra Dun, keys to worker. *Capritermes dunensis* n. sp., soldier holotype, India, Dehra Dun. *Odontotermes microdentatus* n. sp., soldier holotype, imago morphotype and worker, India, Dehra Dun, Uttar Pradesh.) (III. On a new termite, *Indotermes maymensis* Roonwal and Sen-Sarma (gen. and sp. nov.) from Burma (family Indotermitidae nov., pp. 40-45, pls. VII-VIII, table X. *Indotermes maymensis* n. sp., soldier holotype, Burma, Maymyo, genus compared with *Stylotermes, Cornitermes*.) (IV. Revision of the termite genus *Eremotermes* Silvestri (Isoptera: Termitidae: Amitermitinae), pp. 46-93, figs. 11-17, pls. IX-XVIII, tables XI-XXI. *Eremotermes* redescribed, key to species, relationships and geographical distribution, *E. dehraduni* n. sp., soldier holotype, worker morphotype, 12 miles northwest of Dehra Dun, imago described may be *dehraduni* from Dehra Dun, New Forest, swarming at 2:30 p.m. 14, VI, 1955 after shower; *E. fletcheri* Holmgren and Holmgren redescribed, imago, soldier, workers, India, *maliki* Ahmad a synonym; *E. indicatus* Silvestri redescribed, imago, soldier, worker, North Africa, Tunis: Kairouan; *E. madrasicus* n. sp., soldier holotype, workers morphotype, Villivakkam 10 miles north of Madras; *E. neoparadoxalis* Ahmad redescribed soldier, workers West Pakistan and India; *E. paradoxalis* N. Holmgren redescribed, imago, soldier, worker, major, minor, India and West Pakistan.) (V. Systematic monograph of Oriental Kalotermitidae (Isoptera) Part 1. Genera *Kalotermes* and *Neotermes*, pp. 94-275, figs. 18-46, pls. XIX-LXV, tables XXII-XXXIX. Description family Kalotermitidae, keys to genera, imago and soldier castes. Description genus *Kalotermes*, castes, geographical distribution, keys to Oriental species, imago, and soldier. *Kalotermes beesoni* Gardner, redescribed, imago, soldier, pseudoworker, India, and West Pakistan; *K. inamurae* Oshima, original description, dealated female, soldier, two forms, Formosa: *K. indicus* Holmgren, redescribed, imago, Bangkok, Thailand; *K. jepsoni* Kemner, redescribed, imago, soldier, pseudoworker, Maskeliya, Ceylon; *K. mcgregori* Light, original description, imago, soldier, two forms, larvae, Philippines: Luzon Island: Culi Culi near Manila; *K. pintoi* Kemner, redescribed, imago, soldier, pseudoworker, Ceylon, India; *K. taylori*, redescribed, soldier, Philippines, Mindanao Is. Description of the genus *Neotermes*, castes, world distribution, list of 28 Oriental species, keys to Oriental species, imago and soldier. *Neotermes andamanensis* Snyder, original description, dealated female, North Andaman Is.; *N. artocarpi* (Haviland), redescribed, imago, soldier, pseudoworker, Indonesia, Borneo, Sarawak; *N. assmuthi* N. Holmgren, redescribed, imago, soldier, pseudoworker, India, Mysore, Bangalore; *N.*

bosei Snyder, redescribed, imago, soldier, pseudoworker, India, Dehra Dun, Uttar Pradesh, *N. gardneri* Snyder is a synonym; *N. buxensis* n. sp., imago, soldier, pseudoworker, soldier holotype, imago, and pseudoworker morphotype, India, North Bengal, Buxa Forest Division; *N. dalbergiae* Kalshoven, redescribed, imago, soldier, pseudoworker, Indonesia, Java, Banjoemas, and Kedoe; *N. fletcheri* Holmgren and Holmgren, redescribed, imago, soldier, pseudoworker, South India, Madras, Coimbatore; *N. grandis* Light, redescribed, soldier, pseudoworker, Philippines, Luzon; *N. greeni* (Desneux), redescribed, imago, soldier, pseudoworker, Ceylon; *N. kemneri* n. sp., soldier, pseudoworker, soldier holotype, pseudoworker morphotype, Ceylon, Gannoruwa, (Paradeniya) *N. ketelensis* Kemner, redescribed, soldier, pseudoworker, soldier lectotype, pseudoworker lectomorphotype, Oceania: Djampea Island; *N. koshunensis* (Shiraki), redescribed, imago, soldier, pseudoworker, Formosa, south Japan, E. China, *N. lagunensis* (Oshima), redescribed, soldier, pseudoworker, soldier paratype, Philippines, Luzon; *N. longipennis* Kemner, redescribed, imago, imago holotype, Sumatra, Fort de Kock; *N. malatensis* (Oshima), redescribed, imago, soldier, pseudoworker, imago paratype, Philippines, Luzon Island; *N. mangiferae* n. sp., soldier, pseudoworker, soldier holotype, pseudoworker morphotype, India, Calcutta; *N. medius* Oshima, original description, imago, imago cotype, Sumatra, Labuan Badjau, Simalur Island; *N. megaoculatus megaoculatus* n. sp., soldier, pseudoworker, soldier holotype, pseudoworker, morphotype, India, Dehra Dun, New Forest; *N. megaoculatus lakhimpuri* n. subsp., soldier, pseudoworker, soldier holotype, pseudoworker morphotype, India, Assam, Makum, Lakhimpur; *N. microculatus* n. sp., soldier, pseudoergate, soldier holotype, pseudoworker morphotype, India, Dehra Dun, Uttar Pradesh; *N. microphthalmus* Light, redescribed imago, imago cotype, Philippines, Negros Island; *N. militaris* (Desneux), redescribed, imago, soldier, pseudoworker, soldier holotype, Ceylon, *N. militaris,* var. *unidentatus* (Kemner), soldier, Ceylon, is a snyonym; *N. parviscutatus* Light, redescribed, imago, soldier, pseudoworker, cotypes Philippines, Negros Island; *N. pishinensis* Ahmad, original description, soldier, soldier holotype, West Pakistan, Pishin; *N. saleierensis* Kemner, redescribed, imago, soldier, pseudoworker; soldier lectotype, dealated female and worker lectomorphotypes, Oceania, Saleier Island; *N. sinensis* (Light), redescribed, soldier, soldier holotype, China, Kwangtung Prov., Ting Wu Shan Monastery; *N. sonneratiae* Kemner, redescribed, imago, soldier, pseudoworker, soldier lectotype, imagos, and pseudoworkers lectomorphotypes, Java, Batavia; *N. tectonae* (Dammerman), redescribed, imago, soldier, pseudoworker, Java, Keodoing-Djate.)

Roonwal, M. L., and Thakur, M. L., 1963, pp. 102-117. (Andaman Islands, Bay of Bengal, Rhinotermitidae, *Prorhinotermes shiva* n. sp., soldier holotype, major and minor workers morphotypes, India, Long Island, Middle Andaman group. *Schedorhinotermes tiwarii* n. sp., soldier major holotype, soldier minor, and worker morphotypes, South Andaman Island.)

Sands, W. A., 1965b, pp. 1-172. (Africa, revision of subfamily Nasutitermitinae for the Ethiopian region. 47 species recognized, 7 new, in 14 genera, 4 new; 77 names synonymous, of which 62 are newly established synonyms, 4 species removed from subfamily. Phylogeny subfamily discussed; keys to genera and species. Distribution of species and genera related to vegetation types. Notes on biology. List of species and synonyms.)

Nasutitermes hirticeps n. sp., soldier holotype, S. Thomé, Binda, type A.M.N.H. *Leptomyxotermes* n. gen., imago, soldier syntype, *Eutermes doriae* Silvestri generitype, I. Fernando Poo, Basilé, type A.M.N.H. *Fulleritermes coatoni* n. sp., imago holotype, soldiers and workers paratypes N.C.I., Pretoria *Rhadinotermes* n. gen., imago, soldiers and workers syntype, *Eutermes coarctatus* Sjöstedt generitype, Nyasaland, Zomba, A.M.N.H. *Mycterotermes* n. gen., *meringocephalus* n. sp., generitype, major soldier holotype, minor soldier morphotype, Aden, B.M. (N.H.) *Trinervitermes saudiensis* n. sp., male imago holotype, Saudi Arabia, Jidda B.M. (N.H.) *Baucaliotermes* n. gen., imago (queen) morphotype, *Subulitermes hainesi* (Fuller) generitype, South Africa, Kliprand,

N.C.I. *Eutermellus abruptus* n. sp., female imago holotype, soldier morphotype, Congo, Njili, A.M.N.H. *E. aquilinus* n. sp., female imago holotype, soldier morphotype Ghana, Awura, B.M. (N.H.) *E. undulans* n. sp., female imago holotype, soldier morphotype, Ghana 3 m. from Larabanga, B.M. (N.H.) 1965c, pp. 132-136. (Africa, *Nasutitermes diabolus* (Sjöstedt) imago morphotype described and figured, male from Gabon, type in British Museum. *Mimeutermes majusculus* n. sp., described and figured holotype male imago, Tanganyika, Mbeya, type in British Museum.)

SCOTT, H. G., 1961, p. 46. (North America, keys to winged and soldier common termites North America, illustrated.)

SNYDER, T. E., and FRANCIA, F. C., 1962, pp. 63-77. (Philippines, list species, keys to winged and soldiers, glossary.)

SPAETH, V. A., 1964, pp. 27-33. (Israel, Termitidae, Amitermitinae: three new species, *Amitermes wahrmani* soldier holotype, Pardes Hanna, *Eremotermes arctus,* imago holotype, Beror Hayil, Israel, and *Microcerotermes palestinensis* soldier holotype, imago and worker morphotype, Negev, Wadi Abyad (Nahal Lavan). All types are in American Museum Natural History.)

TIETZ, H. M., 1963, p. 116. (North America, Keys to four families of Isoptera, based on winged adult characters, ocelli, frontal gland, wings, cerci, wing stubs.)

TSAI, PANG-HAU, and CHEN, NING-SHENG, 1963, pp. 167-198. (South China, 21 new species, in 12 genera, from Provinces Kwangtung, Fukien, Kwangsi, Yunnan, Hainan, and Chekiang Kalotermitidae: *Cryptotermes declivis* n. sp., soldier, winged, Chaochow, Kwangtung; *Lobitermes nigrifrons* n. sp., soldier, Chinping, Yunnan; *Glyptotermes chinpingensis* n. sp., soldier, winged, Chinping. Rhinotermitidae: *Heterotermes latilabrum* n. sp., soldier, Cheli, Yunnan; *Reticulitermes longicephalus* n. sp., soldier Changting, Fukien; *Schedorhinotermes magnus* n. sp., major, minor soldier, Chinping. Termitidae: *Eurytermes isodentatus* n. sp., soldier, winged, Menghan, Yunnan; *Procapritermes albipennis* n. sp., soldier, winged, Chinping; *Capritermes pseudolaetus* n. sp., soldier, Chinping; *C. minutus* soldier, Chinping; *Odontotermes* (*O*) *yunnanensis* n. sp., soldier, winged, Puerh, Yunnan; *O. angustignathus* n. sp., soldier, Cheli; *Microtermes dimorphus* n. sp., soldier, winged, Chinping; *Nasutitermes fulvus* n. sp., soldier, Chinping, *N. deltocephalus* n. sp., soldier, winged, Chinping; *N. orthonasus* n. sp., major and minor soldier, Chinping; *N. erectinasus* n. sp., major and minor soldier, Lohwei,, Hainan; *N. grandinasus* n. sp., soldier, Kienow, Fukien; *N. communis* n. sp., soldier, Nantsing, Fukien; *N. sinuosus* n. sp., soldier, Chinping; *N. parafulvus* n. sp., soldier, Chinping; described and figured.)

1964, pp. 25-37. (Geographical distribution 62 known species termites of China discussed; north boundary line each region related to climatic factors.)

WEBB, G. C., 1961, pp. 1-34. (Africa, keys to genera African termites adapted from Revision der Termiten Afrikas, vol. 3, Monographie, Y. Sjöstedt 1926.)

WEIDNER, H., 1961, pp. 15-76. (Africa, Angola, key to major soldiers African *Macrotermes.*)

1962, pp. 129-133. (Burma, *Macrotermes azarelii, annandalei, serrulatus* and *serrulatus hopini,* distribution, keys to soldiers.)

1962b, pp. 86-93. (Africa, Sudan, *Pseudacanthotermes harrisensis* n. sp., major, minor soldiers, workers, holotype major soldier, Tozi Research Farm, paratypes one major two minor soldiers, major and minor workers.)

WHEELER, G. C., and WHEELER, J., 1963, pp. 190-193. (U.S., North Dakota, distinguishing characters *Reticulitermes flavipes* and *R. tibialis* winged and soldiers.)

WILLIAMS, R. M. C., 1962, pp. 127-130. (East Africa, Termitinae, correction, *Crenetermes umbraticola* Williams 1954; according to A. E. Emerson, consists of two genera. Williams redescribes the imagos as *Euchilotermes umbraticola* comb. n. holotype, soldier, morphotype, S. E. Kenya, Kwale. *Crenetermes mixtus* nom. nov., holotype soldier, morphotype of original description; morphotype king.)

YU, C. W., and PING, C. M., 1964a, pp. 344-361. (China, Yunnan Province and Hainan Island, *Operculitermes* Yu et Ping n. gen., family Rhinotermitidae, Heterotermitinae, *O. sinensis* Yu et Ping

n. sp., imago, soldier. *O. sinensis sinensis* (subsp. typ), *O. sinensis latipedunculus* (subsp. nov.), *O. sinensis inclinatus* (subsp. nov., *O. latilabrum* (Tsai et Chen), *O. minutus* Yu et Ping n. sp. Key to genus and to soldiers. Types and morphotypes deposited in the South-China Institute of Researches for Subtropical crops.)

Zimsen, E., 1964, pp. 612-613. (Type material of J. C. Fabricius: *Termes destructor* synonym of *Nasutitermes nigriceps* (Haldemann), det. Emerson 1957. *Termes arda, Termes mordax, Termes morio* synonym *Coptotermes testaceus* (Linn.), det. Emerson 1957. *Termes flavicollis* synonym *Kalotermes flavicollis* selected as lectotype Emerson 1937.)

TEMPERATURE

Becker, G., 1963c, pp. 286-295. (Germany, laboratory, *Nasutitermes ephratae* from Mexico young colonies dependent on temperature. Hardly influenced by a temperature between 24° C. and 32° C., egg deposition began after a few days. Embryonic development is shortest at a temperature between 30° C. and 32° C., also shortest for first workers, whereas 29° C. most favorable for first soldiers. This termite needs less time developmental stages than any other observed.)

Greaves, T., 1961, Termites in forest trees, p. 39. *In* Commonwealth Sci. and Indus. Res. Org., Division Ent. 1960-1961 Ann. Rept. (Australia, seasonal studies made of temperature in living trees, temperature of a colony of *Coptotermes acinaciformis* infesting a large blackbutt tree at Pine Creek State Forest, Coff's Harbour studied for several weeks.)

1962, pp. 1-17. (Australia, fluctuations in temperature of colonies of *Coptotermes acinaciformis* in living trees at center of nursery was 35° C. = 95° F. in midwinter rising to 37.8° C. in summer. Vibrations caused a drop in temperature.)

1963, pp. 74-75. (Australia, termites in colonies of *Coptotermes acinaciformis* aggregate in the nursery in cooler weather to maintain the required high nursery temperature. To obtain a more accurate population estimate, a colony in a tree was frozen with dry ice. The temperature cooled rapidly under the bark to −19° C. and after 66 hours the whole tree section was below 0° C. The cooling resulted in a temporary migration of part of the colony to galleries above the nursery.

Porotermes adamsoni cannot thrive at 78° F. Of 100 pairs installed in January 1961, a brood was present in only one of the 42 surviving colonies in June 1961. At 60° F. 73 of the 101 pairs survived of which 52 have a brood. The maximum number in any one colony at 2 years was 22.)

1964a, pp. 250-262. (Australia, temperature inside colonies of *Coptotermes acinaciformis* and *C. frenchi* in living trees are well above those in neighboring, uninfested, parts of the tree. In a colony of the former temperature readings varied from 33° C. to 38° C., i.e., 13° C. to 20° C. above that at the centre of the tree trunk. The movement of termites in the colony was reflected in changes in the nursery temperature, in a *C. frenchi* colony there was little diurnal variation, 27° C. to 36° C., the highest temperature in November when alates were present. The tree insulated against fluctuating air temperature in the same way as a mound insulates a colony of *C. lacteus*. Studies of this kind have been useful in assessing the results of insecticide treatments.)

1965a, pp. 175-180. (Australia, temperature sound buffered tree trunks compared with that of trees infested with *Coptotermes frenchi,* forest buffered fluctuation temperature.)

Ikehara, S., 1961, pp. 1-3. (Japanese Archipelago, data given on temperature (Centigrade) for knowing northwest limits of termites. Formula: Pt (lowest preferred temperature) − At (mean daily temperature in coldest month) + Dt (difference of mean daily temperature between inside the nest and outside in the coldest month at the northern limit. *Hodotermopsis japonicus*—1.6; *Kalotermes koshunensis*—0.9; *K. kotoensis* —0.7, *K. fuscus* 0.5; *Leucotermes speratus* 7.6; *Coptotermes formosanus* —0.5; *Odontotermes formosanus*—1.3;

Eutermes takasagoensis 1.3. A general formula Pt — At + Dt.)

LÜSCHER, M., 1961, pp. 138-145. (Africa, microclimate nests best at 86° F. in tropics, 79° F. in temperate zone.)

LUND, A. E., 1962, pp. 36, 60. (U.S., *Reticulitermes flavipes* in laboratory average lower lethal temperature −11° C., −17.5° C. for winged alates, average upper lethal temperature 48.5° C.)

TERMITOPHILES

BADONNEL, A., 1955, (Africa, Dundo, psocid *Hemiseopsis machadoi* n. sp. in termitarium *Macrotermes natalensis* described and figured, pp. 40-41. Dundo (Luachimo) *Seopsis termitophilus* n. sp. in termitarium *Procubitermes?* described and figured, pp. 44-45.)

BENOIT, P. L. G., 1964, pp. 174-187. (Africa, anophthalmic-eyeless-Oonopidae (Araneae) in termite nests.)

BEYER, E. M., 1965, pp. 181-187. (South Africa, lists little known termitophiles and hosts and describes and figures *Paratermitoxenia* n. gen., and *coatoni* n. sp., from fungus garden cell *Allodontermes rhodesiensis* Sjöst. 14 miles from Heilbron towards Edenville.)

BORGMEIER, T., 1959, pp. 289-308. (Costa Rica and Brazil, four new genera and several new species Staphilinidae, in *Termitonasus* n.g., *Termitohospes,* and *Termitognathus* n.g.)

DELACHAMBRE, J., 1965, pp. 273-283. (Ivory Coast, forest of Bolo, 50 km. from Sassandra, Termitoxeniidae, Diptera *Termitostroma ivorensis* n. sp. physogastric adult and larva, with *Protermes prorepens* described and figured.)

DYBAS, H. S., 1961, pp. 57-62. (Bolivia, Ptiliidae in termite nests, *Xenopteryx* n. gen., *setosus* n. sp., with *Speculitermes* n. sp. Emerson, Cachuela Esperanza, Beni Prov.)

HAVERSCHMIDT, F., 1960, pp. 53-54. (Australia, nesting of birds in arboreal termites' nest: *Xiphorhynchus picus, Progne chalybea, Troglodytes musculus,* and *Aratinga pertinax surinama.*)

JAKUBSKI, A. W., 1965, pp. 168-169. (Revision of family Termitococcidae (Hemiptera, Coccoidea), *Termitococcus aster* Silvestri in nests of *Leucotermes tenuis* (Hag.), Paraguay, Tacuru Pucu; *T. brevicornis* Silvestri in nest *Capritermes opacus parvus* Silv., Brazil, Coxipo Cuyaba.)

JOSEPH, K. J., and MATHAD, S. B., 1963, pp. 379-386. (India, Thysanura, Nicoletidae, *Neatelura* gen. n., *yellapurensis* sp. n. Atelurinae termitophilous with *Microcerotermes fletcheri* at Yellapure, Mysore State; female holotype.)

MOCKFORD, E. L., 1965, pp. 169-176. (South Africa, Psocoptera from termite nests, four species including *Liposcelis bostrychophilus termitophilus* n. subsp. in nest *Odontotermes badius* in Transvaal.)

MUESEBECK, C. F. W., 1965, pp. 187-190. (South Africa, Pretoria, Hymenoptera, Diapriidae, parasite in *Syntermitoxenia pseudonanna,* termitoxeniid from fungus comb in nest *Odontotermes latericius, Termitopria* n. gen., *sheasbyi* n. sp.)

PACLT, J., 1965, pp. 59-60. (Africa, Transvaal, Collembolan, *Cyphoderus trinervoidis* n. sp. in nest *Trinervitermes trinervoides.*)

PHELPS, A., 1965, p. 705. (Respiration rate of the termophilic mite *Thermocarus nevadiensis.*)

ROTH, L. M., and WILLIS, E. R., 1960, pp. 57, 69, 102, 310-311, 316, 317, 320. (General, termites hosts of commensal cockroaches, U.S. and tropics, bibliography, illus.)

SAMSINAK, K., 1961, pp. 193-207. (China, termitophilous Acarina, *Anoetus myrmicarum, Acotyledon* n. spp., and *Hypoaspis* (*Cosmolaelaps*) *hrdvi.*)

SCHEERPELTZ, O., 1963, pp. 136-140. (East India, Staphylinidae, *Zyras beckeri* n. sp.)

VERCAMMEN-GRANDJEAN, P. H., 1965, pp. 259-265. (Africa, *Tenotrombicula minteri* n. gen., n. sp., Trombiculidae, Acarina.)

WYGODZINSKY, P., 1961, pp. 104-109. (South Africa, North Transvaal, Thysanura *Ecnomatelura coatoni* with *Hodotermes mossambicus.*)

TOXICOLOGY

ANONYMOUS. 1962, p. 43. (U.S., what to do when breathing stops; technique of artificial respiration, clear throat, tilt head back, lift jaw forward, pinch and close nostrils, form tight seal with lips, exhale firmly into mouth, remove mouth

and breath in. Repeat 12 to 20 times per minute, illustrated by 2 diagrams.)

1963e, p. 2. (U.S., deaths due to pesticides last year, all accidents in applying the chemicals were 89; aspirin killed 150. DDT alone is credited with saving 5 million lives and preventing 100 million illnesses due to insect carriers.)

1964, pp. 22, 24, 26, 28, 30, 32-34. (U.S., interindustry safety conference seeks proper perspective for antipesticide publicity at Univ. Oklahoma November 20-22, 1963. Proper labeling, application, use of poison control centers, counteract carelessness; government officials participated.)

Dreisbach, R. H., 1961, pp. 1-460. (U.S., handbook of poisoning, diagnosis and treatment, including bites and stings of Arachnids and insects, illustrated.)

Fechino, A., 1961, pp. 67-75. (Toxicology of insecticides antidotes and preventatives. A, review, 23 references, chlorinated hydrocarbons: DDT, methoxychlor, BHC (HCH), lindane, heptachlor, aldrin, dieldrin, isodrin, toxaphene and chlordane; organo-phosphorus compounds: TEPP, parathion, diazinon, malathion, etc.)

Fechner, J., 1962, pp. 111-115. (Acute toxicity, chlorinated hydrocarbons less than that of organic phosphorous compounds, but chronic apt to be greater. Dieldrin, aldrin and endrin stored in fatty tissue in relatively large amount; chlordane, heptachlor and toxaphene have less tendency to be stored. Problem of residues and toxicity of pesticides should be solved on an international basis.)

Fishbein, W. I., White, J. V., and Isaacs, H. J., 1964, pp. 726-727. (U.S., 15 workers under constant, though minimal exposure to chlordane over periods ranging from 1 to 15 years showed no evidence of injury to any of the organic systems subject to study. There is little if any hazard from the use of chlordane when properly employed.)

Fulton, R. A., Smith, F. F., and Busbey, R. L., 1962, pp. 1-15. (U.S., chemical cartridge respirators and gas masks and their uses described for protection against certain pesticides, list of type, conditions requiring, care of.)

1964, pp. 1-12. (U.S., list of pesticides and type respirator to use, life of canister, precautions, illustrations.)

Hayes, W. J., Jr., 1963, pp. 1-144. (U.S., clinical handbook on economic poisons. Emergency information for treating poisoning. Organic phosphorus insecticide, carbamate, chlorinated hydrocarbons, botanical, solvents, rodenticides, fungicides, herbicides, illustrations artificial respiration.)

Heal, R. E., 1964, pp. 82-84. (U.S., urges careful objectives and scientific investigation to establish the realities of hazard from the use of aldrin and dieldrin as soil poisons in termite control before action is taken to limit their applications further. The soil toxicants that may be considered as alternates for aldrin, dieldrin, chlordane, or heptachlor are markedly less efficient, protection would be reduced from 10-15 years to 3-5, with no reduction of toxicological hazard, but would impose a great financial burden on the public. Termite shields, concrete foundations or reinforced concrete caps on masonry foundations are not effective with slab-on-ground construction. The use of some minimum amount of pressure-treated lumber seems impractical under current recommendations. National Pest Control Association has 1000 structural pest control firms as members, and 28 state or local affiliates, do 75% of the work; 84% of the members do termite control work. This statement was presented to the U.S. Dept. of Agriculture April 16, 1964, at a hearing at Memphis, Tenn. The U.S.D.A. is currently reexamining registration of several pesticides including those cited above.)

Ingle, L., 1965, pp. 1-88. (Chlordane, toxicological, and pharmacological properties, references.)

Laws, E. R., 1966, pp. 8-10. (U.S., how to handle pesticides safely and principles of treatment of pesticide accidents, safety regulations.)

Lewallen, L. L., 1962, pp. 1-29. (Glossary of insect toxicology, over 300 technical terms.)

McLean, L. A., 1962, pp. 1-19. (U.S., safety of pesticides, practical hazard misuse, most important to consider poisoning in connection with children, in 1956 out of 152 deaths only 58 were adults. A manufacturer of a pesticide is required to spend an average of a million dollars and 6 years in research and testing before marketing is permitted.)

MANNS, M., 1963, pp. 9, 11, 12, 14, 63. (U.S., how to use insecticides and fumigants safely, read label, warning placards, safety equipment, safe handling, don't work alone, safety kits.)

STEIN, W. J., and HAYES, W. J., 1964, pp. 549-555. (U.S., through cooperation with the National Pest Control Association a survey of the health of pest control operators was conducted by questionnaires distributed to member firms and their employees, 12% of all companies represented by the N.P.C.A. responded, most of the personnel were white males. Cases of acute poisoning, dermatitis, and allergy were revealed in persons with heavy direct exposure to pesticides, but failed to suggest the association of pesticides with any other disease.

TOMOV, A., 1962, pp. 67-70. (Relative toxicology for chlorinated hydrocarbon insecticides to man and warm-blooded mammals. Acute oral toxicities indicated dieldrin and aldrin more toxic than chlordane or DDT.)

U.S. DEPT. AGRIC., AGRICULTURAL RESEARCH SERVICE, 1964, pp. 1-6. (U.S., safe disposal of empty pesticide containers and surplus pesticides. Keep pesticides in separate room or building. Drain any pesticide remaining into a sandy soil pit. Dispose of large metal drums by returning to supplier or selling. Dispose on dump or incinerator after breaking or puncturing. Select a safe private disposal site. Burn combustible containers. Use pesticides safely; read the label.)

U.S. PUBLIC HEALTH SERVICE, 1965, pp. 1-40. (Entire U.S., lists location, telephone number, and officer to be contacted at poison control centers, facilities which provide the medical profession on a 24-hour daily basis information concerning the prevention and treatment of accidents involving ingestion of or contact with poisonous or potentially poisonous substances. Treatment is available at most of the centers.)

WARD, J. C., 1962, pp. 9, 11-12, 14-15. (U.S., public acceptance of pesticides depends on safe use, Poison Control Centers attempt to reduce accidents by education, death certificates not too accurate, 10% due to pesticides, deaths between 1954 and 1959—134 to 166. Fear makes chemicals respected. Residues must be guarded against. Safety record will determine public acceptance of chemical. Pest control operator can't make same mistake twice in handling toxic gas. Safe use of pesticides will lower insurance rate.)

WEST, I., and KLEINMAN, G., 1964, p. 21. (California Dept. Public Health statistics accidents attributed to pesticide poisoning of structural pest control employees from January 1961 through September 1963 shows 29, 2 attributable to fumigation, 16 to general pest, and 11 to termite work. 14 were skin irritations, no deaths reported.)

WHITNEY, W. K., 1961, pp. 16-21. (Fumigation hazards, types fumigants, properties, limitations of warning agents.)

USES IN INDUSTRY, ARTS, AND RELIGION

DAS, G. M., 1957, pp. 8-9. (India, remove termite mounds or mix with an equal amount of cattle manure plus 1 ounce flowers of sulfur per mound of soil and scatter widely in tea culture. The site should be hoed and treated with sulfur to increase acidity. A green crop should be grown and plowed in before planting tea.)

WOOD PRESERVATION, POISONS FOR FABRICS, FIBER BOARDS, INSULATION, ETC.

ANONYMOUS. 1960a, pp. 37-38. (Australia, timber preservation by dip diffusion for nonleaching locations, free-flowing preservative which can be supplied in premixed form.)

1961, pp. 5-7, 10-11, 14-15, 18-19, 20-21. (U.S., where to buy pressure-treated wood products.)

1961e, p. 35. (Australia, plastics polythene and polyvinyl chloride susceptibility to termites increases with additions of plasticizer. This can be decreased by the use of phosphate instead of phthalate plasticizers, the incorporation of 5% of inert fillers such as hard silica, zircon flour, or diatomaceous earth, and addi-

tions of small amounts of aldrin and dieldrin during processing.)

1962i, p. 14. (U.S., pressure-treat house under-structure to avoid termite damage.)

1962s, pp. 10-23. (U.S., alphabetical list of AWPI member treating companies and their sales offices addresses. 1963 National Guide, where you can buy pressure preserved wood products.)

1964c, pp. 12-23. (U.S., 1964 National Guide, where you can buy pressure preserved wood products.)

1964k, p. 3. (U.S., preferential fire insurance rates for FRT, fire retardant treated wood used as building material in 49 states, approved by all four of nation's model building codes, treated wood resistant to rot and termites.)

1964p, pp. 1-51. (U.S., Mississippi State Highway Dept. report on wood preservatives in test garden, Jackson, Miss., pp. 1-36. After the 1963 inspection only coal tar creosote (80-20) pressure 16 pounds per cubic feet 100%; crewood hot oil dip 86%; Reilly transparent creosote pressure 79%; another lot of same 38%; pentachlorophenol 5% pressure 10.72 pounds per cubic feet 89%; chemonite pressure 91%; all treated wood posts dense pine except coal tar creosote. Guard rail posts on Mississippi highways, pp. 37-51. After the 1963 inspection only coal tar creosote, pressure 12 pounds per cubic feet, pine square posts, 67 remaining in test since 1931, 58 showing decay and another lot 98 remaining, since 1938, 47 showing decay, and still another lot, Douglas fir 96 remaining since 1944, none showing decay, some posts were removed because of construction causes. The other posts, resistant or treated wood, were removed earlier because of low rating or construction causes.)

1965, pp. 5, 7, 9, 11, 15, 17, 19, 21, 22-23. (U.S., 1965 National buyers guide for pressure preserved wood, list and addresses companies.)

1966b, pp. 16-39. (U.S., 1966 buyers guide for pressure preserved wood products, lumber, etc., names and addresses companies.)

1966h, pp. 15-17. (Idem. 1966—supplement.)

Attfield, J. G., 1961, pp. 108-110, 112-113. Australia, dieldrin as a wood preservative.)

Becker, G., 1961b, pp. 1-7. (Germany, Berlin-Dahlem, 25 years of wood preservation and testing against decay, beetles, and termites.)

1962a, pp. 215-222. (General, survey on testing in the laboratories in various countries durability of materials and efficacy of wood preservatives, 20 species termites employed, 80 most important publications listed.)

1962c, pp. 17-40. (General report given of results from 1950-1961, preference given to work at the Bundesantalt für Materialprüfing, Berlin-Dahlem, Germany, spread wood pests in Germany and the rest of the world, summary most important contributions to biology, improvements in control using organic materials, water soluble and oily wood preservatives, hot air and irradiation methods, bibliography 300 references.)

1962f, pp. 476-486. (Tests of wood and wood preservatives with *Heterotermes indicola,* effects of temperature and humidity on this tropical termite, test results influenced by different factors, termite suitable for tests in nontropical country of resistance of woods and wood preservatives.)

1963, pp. 1-4. (Tropics, discussion most suitable preservatives and methods, penetration, etc.)

1965c, pp. 469-478. (Tests of synthetic contact insecticides in pine sapwood against four termite species, Aldrin, dieldrin and E605f proved the most effective after various periods; the termite species showed differing sensitiveness. After storage of the treated wood for 11 to 14 years, 1 to 2 kg. of the most effective insecticides are required per m³ of wood; they are comparatively permanent. This improves their value as protectives with a repellent effect.)

Becker, G., and Theden, G., 1963, pp. 1-258. (Wood protection.)

Blew, J. O., Jr., 1962, pp. 1-9. (Compares wood preservatives used on southern yellow pine tests stakes in five sites in the United States and one in the Canal Zone, Panama. Superficial treatments do not prolong the life of the wood as long as the pressure treatments. Details given in tables dating back to 1938.)

1963, pp. 1-9. (Continuation of reports on tests, latest December 1962. Some waterborne preservatives, during the time

tested, compare favorably with standard preservative oils.)

1964, pp. 1-9. (Continuation of reports on tests, latest December 1963. Details given in tables dating dack to 1938.)

BLEW, J. O., and KULP, J. W., 1962, pp. 1-15. (U.S., Mississippi, posts installed from 1936 to 1941 that have had failures totaling 10% or less treated with 3% and 4.8% pentachlorophenol in crankcase oil; copper sulfate and sodium arsenate applied by double diffusion; and zinc meta arsenite should last 39 years or longer on an average; treated with other preservatives 8-38 years.)

1963, pp. 1-15. (Continuation above tests, with another year's life record.)

1964, pp. 1-15. (Continuation above tests, with another year's life record.)

1965, pp. 1-15. (U.S., Mississippi, posts installed from 1936 to 1941 that have had failures totaling 10% or less treated with 4.8% pentachlorophenol in crankcase oil; copper sulfate and sodium arsenate applied by double diffusion; and zinc meta arsenite should last 42 years or longer on an average; treated with other preservatives 8-41 years.)

1965a, pp. 1-9. (Continuation of comparative tests of wood preservatives used on southern yellow pine stakes in five sites in the United States and one in the Canal Zone, Panama, inspections were made in December 1964. Details are given in tables, with a summary of results in table 45, the average life of the treated wood ranged from 2.5 to 24 years, the most effective having no failures after 13-24 years.)

CHATTERJEE, P. N., and SEN-SARMA, P. K., 1963, pp. 280-285. (India, commercial sample of shell liquid of cashew nut (*Anacardium occidentale,* aldrin and dieldrin tested as 1 minute dips (after overnight drying) in "grave-yard" plot for 4 years, termites *Odontotermes* spp. Preference should be given to aldrin at 2% concentration; cashew nut shell can be discarded as a wood preservative.)

ERNST, E., 1961. (Resistance of treated plastics.)

GAY, F. J., 1961. (Laboratory studies, pp. 37-38, field studies, p. 38. *In* Commonwealth Sci. and Indus. Res. Org., Divis. Ent. 1960-1961 Ann. Rept.) (Australia, laboratory tests of plastics show better termite resistance of polyvinyl chloride plasticized with tricresyl phosphate compared with phthalate-plasticized material, and increasing resistance by adding small amounts of inert fillers such as hard silica or zircon flour to polyvinyl chloride. Laboratory colony groups of *Nasutitermes exitiosus* exposed to untreated wood, or wood treated with low loadings of arsenic pentoxide, show that at levels below 0.008% the termites do not discriminate. Small-scale laboratory colonies of *Nasutitermes exitiosus* with an initial population of 49, are being used to investigate the repellent and/or toxic properties of anthraquinones. Field studies show surface treatments 10% sodium arsenite only material giving complete protection against *Coptotermes lacteus* after 3 years. At Rollingstone, Queensland field tests of cables and cable sheathings showed 98% showed evidence of contact by termites the first year and more than 15% were destroyed. Polyethylene sheathings more resistant than polyvinyl chloride especially by the addition of a Nylon coating.)

1962, pp. 60-62. (Laboratory studies with standard colonies of *Nasutitermes exitiosus, Coptotermes lacteus* and *C. acinaciformis* with insulation corkboard, plastics, etc.; cellulose acetate butrate piping was attacked by *Coptotermes acinaciformis* 0.1% dieldrin in strawboard or 0.01% to 0.05% aldrin in hardboard protected against termites, acetal resin (polyoxymethylene) highly resistant to termites. Two anthraquinone derivatives showed comparative activity to the active principle in teak. Field studies, surface treatments with 10% sodium arsenite continue to give complete protection against *C. lacteus* after 4 years, failing against *N. exitiosus* the first year.)

1963c, pp. 71-74. (Laboratory studies. Water-borne preservatives of the fluorchrome-arsenic type retain their high toxicity to termites after severe leaching. Building board formed of *Pinus radiata* wood wool bonded with magnesium carbonate not susceptible. Polyethylenes with a low melt flow index are more resistant than those with a high. Field studies. Surface treatments of *Pinus radiata* with 10% sodium arsenite continues to give complete protection for 5 years against *Coptotermes lacteus.* At Rollingstone, Queensland tests of cables

and cable sheathings against *Mastotermes darwiniensis* show polythene sheathings superior to polyvinyl chloride and nylon sheathing giving satisfactory resistance.)

GAY, F. J., and HIRST, K., 1963, pp. 1-3. (Australia, termite-proof plywood through glue line poisons, 1%-2% arsenic trioxide, 1% chlordane, against *Nasutitermes exitiosus* and *Coptotermes lacteus,* no data on permanence.)

GAY, F. J., and SHULZ, W. O., 1965, pp. 6-9. (Australia, comparison water-soluble wood preservative formulations CKB (chromium, copper, and boron) and CFA (chromium, fluorine, and arsenic) against *Nasutitermes exitiosus, Coptotermes acinaciformis,* and *C. lacteus* attack on *Pinus silvestris* and *Fagus silvatica.* Laboratory tests show CKB and CFA equally effective, although the former did not have the high poisonous effect of the later.)

GILES, D. T., 1962, pp. 5-7. (Washington, D.C., wood parts of new stadium seats pressure treated with water repellent pentachlorophenol by Cellon process protects against decay and termites, deep penetration.)

GÖSSWALD, K., 1962, pp. 169-178. (Germany, laboratory testing of resistance of materials and preservatives to *Calotermes flavicollis* and species of *Reticulitermes* under controlled conditions of temperature and humidity. Former more resistant and aggressive, gives more severe test, in general can be applied to conditions *in situ.*)

HALLSTED, C. T., 1965, pp. 16-17. (Hawaii, Douglas fir plywood pressure treated with Wolman salts guaranteed for 20 years against termites; termites and decay cause 3 million dollars annual damage to wooden structures in Hawaii.)

HOWICK, C. D., 1965, pp. 1-3. (Australia, preservative treatments against termites and fungi for timber constructions.)

HRDÝ, I., 1963, pp. 75-85. (Czechoslovakia and South China, laboratory and field tests impregnated wood-fiber plates, in China against *Coptotermes formosanus* and *Odontotermes formosanus, O. hainaensis* and *Macrotermes barneyi,* in Czechoslovakia against *Coptotermes;* the laboratory test lasted for 3 months, the field 1 year. Samples provided with a coat of impregnating combination, consisting of pentachlorophenol (PCP) plus insecticide (DDT or BHC) in trichlorobenzene proved most resistant in laboratory. The least damage was done to samples protected by these combinations: 5% DDT plus 2% PCP in TCB (extent of damage, 4% of original weight of sample, mortality at end of test 100%); 2% DDT plus 5% PCP in TCB (damage, 5%, mortality 100%); 5% BHC plus 2% PCP in TCB (damage 27%, mortality 97%); and 5% BHC plus 5% PCP in TCB (damage, 29%, mortality 100%. Field tests corroborated laboratory tests, both showed greater resistance of samples protected by combined agents.)

LUND, H. O., 1961, pp. 58-60. (U.S., termites can tube over chemically treated wood, but not over surfaces of treated masonry voids.)

MARTÍNEZ, J. B., 1960, pp. 1-83. (Spain, impregnated wood, pressure treated in cylinders to protect against termites, beetle and marine borers.)

1963, pp. 31-86. (Spain, biochemical laboratory tests of soil poisons and wood preservatives effective against *Reticulitermes lucifugus* and *Cryptotermes brevis.*)

MASON, G. G. W., 1963, pp. 19-20. (New Zealand, preservation house timbers.)

MERRICK, G. D., 1961, pp. 219-253. (U.S., in 1960 the volume of wood treated was 216.1 million cubic feet an increase of 1.6 million cubic feet or ¾ of 1% over 1959. The use of creosote decreased 3% below 1959, but the use of creosote and in all solutions increased 2%. The use of pentachlorophenol decreased 7%. In 1960 creosote or creosote solution was used for 70% of material treated, petroleum-pentachlorophenol for 19%, and creosote-pentachlorophenol solution for 4%. All other preservatives and fire retardants were used for 7%.)

1962, pp. 253-287. (U.S., in 1961 the volume of wood treated was 215.4 million cubic feet a decrease of less than 700 thousand cubic feet or less than one-half of 1% from 1960. Use of creosote, coal tar, and petroleum decreased 2.6%, while the use of salts increased 8%. Pentachlorophenol increased 5%, Tanalith 5%, chromated zinc chloride 2%, Pyresote and Protexol 4%, Minalith 11%, Boliden Salts more than doubled. In 1961 creosote or a creosote solution was used for 68% of material treated, petroleum-pentachlorophenol for 19%, and creosote-pentachlorophenol for 4%. All other

preservatives and fire retardants were used for 9% of the material.)

1963, pp. 235-269. (U.S., in 1962 the volume of wood treated was 213.9 million cubic feet—a decrease of 1.5 million cubic feet or less than 1% from 1961. Use of creosote, coal tar and petroleum increased 7 million gallons, or 4%, from 1961, while the use of solids increased 4 million pounds or 17%. Pentachlorophenol increased 21%. Others showing increased use include Tanalith, Non-Com, chromated zinc chloride and Boliden Salts. The comparative percentage of preservatives used showed slight changes from 1961.)

1964, pp. 201-235. (U.S., in 1963 the volume of wood treated was 217.4 million cubic feet (with preservatives and fire retardants), 3.5 million cubic feet or 1.6% more than in 1962. Use of creosote, coal tar, and petroleum increased about one-half million gallons, or less than one-half of 1%; use of solids increased about 800 thousand pounds or 2.8%. Pentachlorophenol decreased, but the use of Tanalith, chromated zinc chloride, Celcure and Osmosalts increased. The use of fire retardants increased about 33%.)

1965, pp. 267-301. (U.S., in 1964 the volume of material treated was 237 million cubic feet (with preservatives and fire retardants), nearly 19.7 million cubic feet or 9% more than in 1963, the greatest volume in any year since 1957. Use of creosote, straight and in solutions, increased 9 million gallons or 7%. Use of water-borne preservatives and fire retardants increased nearly 6 million pounds or 20%. Pentachlorophenol increased 2.7 million pounds or 17%, Tanalith increased 0.5 million pounds or 14%. Creosote is the most widely used preservative. Straight or with coal tar or petroleum it accounted for 65% of all material treated as in 1962 and 1963. Petroleum-pentachlorophenol was used for 21% of the total, 1% more than in 1963. Creosote-pentachlorophenol was used for 5% and all other preservatives and fire retardants for 9% of the total volume of all material treated. A 5-year summary of annual consumption of preservatives is given.)

Narayanamurti, D., 1962, pp. 185-197. India, protection of composite wood products, plywood logs enclosed in alkathene prevented drying; plywood can be treated either as the finished product, or the individual components, if veneers are treated there may be difficulties in glueing, if plywood there may be delamination with some types of adhesives. Bales of bagasse can be protected from termites by sprinkling with boric acid. Details are given of the complicated problem of treating veneer and glue, plywood, laminated wood, fiber boards, chip, and bamboo boards. Results of graveyard tests of these chemicals in protecting against termites as well as naturally resistant woods, sal, teak, sissoo, and acacia.)

Narayanamurti, D., and George, J., 1961, pp. 667-669. (Results of field tests for 15 weeks and accelerated laboratory tests for 14 days showed BHC, PCP, DDT, PCP-DDT, Xylamon, and copper naphthenate gave effective protection to treated hardboard.)

Narayanamurti, D., Prasad, B. N., and George, J., 1961, pp. 375-376. (Protection of chipboards from fungi and termites, 5% and 2% pentachloropenol and 5% Xylamon gave best results, 630 days.)

Purushotham, A., 1962, pp. 237-240. (India, protection of building materials against termites by use of preservatives. Tests were made by placing treated specimens in termite mounds. After 19 months material treated with copper and zinc resinate resisted attack. Material treated with creosote 100%, Solignum, Creosant, tar stil tar was normal after 27 months. Woods treated with aldrin, dieldrin, BHC, and DDT resins after 2 years were in satisfactory condition. Mud mortar impregnated with ascu solution gave protection for 6 years.)

Sonti, V. R., 1962, pp. 203-204. (Design and application of portable pressure/vacuum plants for termite-proof timber, thatch and bamboo construction, India. Details given, scope of use, preservative ascu, cost low.)

Tamblyn, N. E., 1960, pp. 27 et. seq. (Australia, the importance of preservative treatments in hardwood utilization.)

1962, pp. 1-4. (Preservation hardwood building timbers, tropical countries, less developed areas.)

1962a, pp. 79-89. (Australia, some current trends and problems in wood preservation.)

Tewari, M. C., 1961, pp. 10-13. (India, analysis Ascu treated timber after more than 20 years service was least in chir pine and highest in fir, deeper penetration can be obtained in chir. Three soft woods chir, kail, and deodar after 23 years service in the field contain more than 50% of the preservative originally injected.)
Townsend, R. F., 1964, pp. 13-19. (A western utility's experience with treated wood including termite attack.)

ZOOGEOGRAPHICAL REGIONS: AUSTRALIAN

Anonymous. 1960a, pp. 37-38. (Australia, Canberra.)
1961e, p. 35. (Australia, Canberra.)
1962n, p. 81. (Australia, Canberra.)
Attfield, D. J. G., 1961, pp. 108-110, 112, 113. (Australia.)
1962, pp. 252-253.
Beesley, J., 1961, pp. 3-4. (Australia.)
Casimer, M., 1960, pp. 230-232. (Australia.)
Cleveland, L. R., and Grimstone, A. V., 1964, pp. 668-685.
Commonwealth Scientific and Industrial Research Organization, Division of Entomology, 1962. (Termites, pp. 13, 61-64.) (Australia.)
1963, (Termites, pp. 12-13, 71-76.) (Australia.)
Cumber, R. A., and Eyles, A. C., 1961, pp. 426-440. (New Zealand, North Island.)
DaCosta, E. W. B., Rudman, P., and Gay, F. J., 1958, pp. 291-298. (Melbourne, Australia.)
1960. (Australia.)
1961, pp. 308-319. (Australia.)
Gay, F. J., 1961, *in* C. S. I. R. O., Div. Ent. 1960-1961 Ann. Rept. pp. 37-39. (Australia.)
1962, pp. 60-62. (Australia.)
1963, pp. 421-423. (Australia.)
1963a, pp. 1-4. (Australia.)
1963b, pp. 47-60. (Australia.)
1963c, pp. 71-74. (Australia.)
1965, pp. 47-48. (Australia.)
Gay, F. J., and Hirst, K., 1963, pp. 1-3. (Australia.)
Gay, F. J., and Schulz, W. O., 1965, pp. 6-9. (Australia.)
Gay, F. J., and Wetherly, A. H., 1962, pp. 1-31. (Australia.)
Greaves, T., 1961, *in* C.S.I.R.O., Div Ent. 1960-1961. Ann. Rept. p. 39. (Australia.)
1962, pp. 1-17. (Australia.)
1962a, pp. 63-65. (Australia.)
1962b, pp. 238-240. (Australia.)
1962c, pp. 630-651. (Australia.)
1963, pp. 74-76. (Australia.)
1964, pp. 1-4. (Australia.)
1964a, pp. 250-262. (Australia.)
1965, p. 46. (Australia.)
1965a, pp. 175-180. (Australia.)
Greaves, T., McInnes, R. S., and Dowse, J. E., 1965, pp. 161-174. (Australia.)
Hadlinton, P., 1965, pp. 36, 38. (New South Wales.)
Haverschmidt, F., 1960, pp. 53-54. (Australia.)
Hodson, A. C., 1965, p. 594. (Australia.)
Howick, C. D., 1965, pp. 1-3. (Australia.)
Mason, G. G. W., 1963, pp. 19-20. (New Zealand.)
Minko, G., 1965, pp. 1-3. (Australia.)
Moore, B. P., 1962, pp. 13-15. (Australia.)
1962a, pp. 1101-1102. (Australia.)
1963, pp. 12-13. (Australia.)
1964, pp. 371-375. (Australia.)
1965, pp. 17-18. (Australia.)
New South Wales, Dept. of Agriculture, Entomology Br., 1964, pp. 1121-1122. (Australia.)
Ramage, A., 1964, pp. 26-27. (Australia, N.S.W.)
Rudman, P., 1959, pp. 112-115. (Australia.)
1960, pp. 1356-1357. (Australia.)
1965, pp. 52-58. (Australia.)
Rudman, P., and Da Costa, E. W. B., 1959, pp. 33-42. (Australia.)
1960. (Australia.)
1961, pp. 10-15. (Australia.)
Rudman, P., and Gay, F. J., 1961, pp. 50-53. (Canberra.)
1961a, pp. 117-120. (Australia.)
1963, pp. 21-25. (Australia.)
1964, pp. 113-116. (Australia.)
Tamblyn, N. E., 1960, pp. 27 et seq. (Australia.)
1962a, pp. 79-89. (Australia.)
Zondag, R., and Gilmour, J. W., 1963, pp. 40-42. (New Zealand.)

ZOOGEOGRAPHICAL REGIONS: ETHIOPIAN

Anonymous. 1960b, pp. 1-6. (Tanganyika.)
1960c. (West Africa.)
1964a, p. 58. (Uganda.)
Badonnel, A., 1955, pp. 40-41, 44-45. (Africa, Dundo.)
Beier, M., 1964, pp. 198-200. (Congo.)

BENOIT, P. L. G., 1964, pp. 174-187. (Africa.)
BESS, H. A., 1963, p. 204. (Kenya.)
BEYER, E. M., 1965, pp. 181-187. (South Africa.)
BODOT, P., 1961, pp. 3053-3054. (Africa.)
1962, pp. 789-790. (Ivory Coast.)
1964, pp. 283-291. (Ivory Coast.)
BOUILLON, A., 1958, pp. 198-209. (Katanga.)
1964, pp. 1-414. (Africa.)
BOUILLON, A., LEKIE, R., and MATHOT, G., 1962, pp. 1-35. (Africa.)
BOUILLON, A., and MATHOT, G., 1965, pp. 1-115. (Africa.)
BOYER, P., 1958, pp. 749-754. (Africa.)
BROWN, K. W., 1961, pp. 1-18. (Africa, Uganda.)
BRUNCK, F., 1962, pp. 20-22. (Tropical Africa.)
CASTEL-BRANCO, A. J. F., 1963, pp. 17-94. (Africa, South Tomé.)
CLOUDSLEY-THOMPSON, J. L., 1964, pp. 1-11. (Africa, Sudan.)
COATON, W. G. H., 1962, pp. 61-70. (Northern Rhodesia.)
1962a, pp. 159-166. (Northern Rhodesia.)
1962b, pp. 144-156. (South Africa.)
1962c, pp. 318-327. (South Africa.)
1963, pp. 38-50. (South Africa.)
1964, pp. 90-103. (South Africa.)
DAVIES, O., 1959, pp. 290-291. (Africa.)
DELACHAMBRE, J., 1965, pp. 273-283. (Ivory Coast.)
DELIGNE, J., 1962, pp. 7-21. (Africa, Natal.)
1965, pp. 179-186. (Africa.)
DIFFIDENTI, G. A., 1963, pp. 45-54. (Africa.)
DIXON, P. A., 1959, pp. 93-94. (Africa.)
ERNST, E., 1963, pp. 276-279. (Africa.)
1964, pp. 173-178. (Africa.)
1964a, pp. 569-576. (Ivory Coast, East Congo.)
FORSYTH, J., 1966, pp. 76-78. (Ghana.)
GEIGY, R., HECKER, H., and KEISER, F., 1964, pp. 280-286. (Africa.)
GENTRY, J. W., 1965, p. 8. (Northeast Africa.)
GLOVER, P. E., TRUMP, E. C., and WATERIDGE, L. E. D., 1964, pp. 367-377. (Kenya.)
GOODALL, J., 1963, pp. 304-308. (Tanganyika.)
GRASSÉ, P. P., and NOIROT, C., 1961, pp. 311-359. (Africa.)
HALL, D. W., 1956, p. 106. (East Africa.)
HARRIS, W. V., 1962d, pp. 311-318. (Africa, Sudan.)
1963a, pp. 1-43. (Africa, Congo.)
1964a, pp. 78-81. (Africa, Sudan.)
1965a, pp. 10-18. (West Congo.)
HARRIS, W. V., and SANDS, W. A., 1965, pp. 113-131. (Africa.)
HOCKING, B., 1963, pp. 280-285. (East Africa.)
1965, pp. 83-87. (East and South Africa.)
HOLMGREN, L., 1963, pp. 1-4. (Ethiopia.)
HUTCHINS, R. E., 1966, pp. 1-324. (East Africa.)
KOCH, C. D., 1965, pp. 19, 21-22. (South Africa.)
KRISHNA, K., 1963, pp. 1-22. (Africa.)
LOWE, R. G., 1961, pp. 73-78. (Nigeria.)
LÜSCHER, M., 1961, pp. 138-145. (Africa.)
MACHADO, A. DE B., 1963, pp. 1-3.
MOCKFORD, E. L., 1965, pp. 169-176. (South Africa, Transvaal.)
MUESEBECK, C. F. W., 1965, pp. 187-190. (South Africa, Pretoria.)
NEL, J. J. C., 1964, pp. 104-110. (Africa, Orange Free State, South Africa.)
NOIROT, C., 1960, pp. 19-24. (South Africa.)
(1960a) 1962, pp. 658-659. (Ivory Coast.)
1963, pp. 630-662. (Africa.)
NOIROT, C., and BODOT, P., 1964, pp. 3357-3359. (Ivory Coast.)
NOIROT, C., and NOIROT-T, C., 1963, pp. 180-188. (Ivory Coast.)
PACLT, J., 1965, pp. 59-60. (Transvaal.)
PASTEELS, J. M., 1965, pp. 191-205. (Africa.)
REISCH, J., 1961, pp. 113-117. (East Africa, Kenya.)
ROSE, D. J. W., 1963. (Rhodesia.)
SANDS, W. A., 1960, pp. 251-259. (Africa.)
1961, pp. 177-188. (West Africa.)
1961a, pp. 277-288. (West Africa.)
1962, pp. 179-192. (West Africa.)
1962a, pp. 1-14. (Nigeria.)
1965, pp. 49-58. (Nigeria.)
1965a, pp. 117-129. (Nigeria.)
1965b, pp. 1-172. (Ethiopian region.)
1965c, pp. 132-136. (Africa.)
1965d, pp. 557-571. (North Nigeria.)
SCHMIDT, R. S., 1960, pp. 357-368. (Africa.)
1964, pp. 221-225. (Africa.)
SCHMUTTERER, H., 1961, pp. 479-489. (Sudan.)
SCHWAB, R., 1963, pp. 57-58. (South Africa.)
SWEENEY, R. C. H., 1961, p. 42. (South Africa.)
TESSIER, F., 1959, pp. 91-132. (Africa, Senegal, Dakar, Neocene.)
1959a, pp. 3320-3322. (Dakar.)
THOMAS, E. D., 1964, pp. 56-61. (South Africa.)
U.S. DEPT. AGRIC., PLANT PEST CONTROL DIV., COOP. ECON. INSECT REP., 1962, pp. 53, 54. (Sudan.)
1963, pp. 79, 80. (Sudan.)
1963a, p. 83. (Ethiopia.)

Van Ark, H., 1961, pp. 46-48. (South Africa, Karoo.)
1964, pp. 121-124. (South Africa, Karoo.)
Vercammen-Grandjean, P. H., 1965, pp. 259-265. (Africa.)
Watson, J. P., 1962, pp. 46-51. (Southern Rhodesia.)
Webb, G. C., 1961, pp. 1-34. (Africa.)
Weber, N. A., 1964, pp. 197-204. (Africa, Belgian Congo.)
Weidner, H., 1961, pp. 15-76. (Angola.)
1962b, pp. 86-93. (Sudan.)
1963, pp. 409-411. (Sudan.)
Wiese, I. H., 1964, pp. 823-835. (South Africa.)
Wilkinson, W., 1962, pp. 265-286. (West Africa, Nigeria.)
1962a, pp. 1-8.
1963, pp. 269-275. (West Africa, Nigeria.)
1964, pp. 337-339. (Kenya.)
1965, pp. 669-670. (Africa.)
Williams, R. M. C., 1962, pp. 127-130. (East Africa.)
Wygodzinsky, P., 1961, pp. 104-109. (South Africa, North Transvaal.)

ZOOGEOGRAPHICAL REGIONS: INDO-MALAYAN

Ahmad, M., 1962, pp. 67-68. (West Pakistan.)
1963, pp. 395-399. (Thailand.)
1965, pp. 1-114. (Thailand.)
Annandale, N., 1910, pp. 201-202. (India, Calcutta.)
Anonymous., 1960, p. 109. (Malaya.)
Arora, G. L., 1962, pp. 111-113. (India, Punjab.)
Ausat, A., Cheema, P. S., Koshi, T., Perti, S. L., and Ranganathan, S. K., 1962, pp. 121-125. (India.)
1962a, pp. 199-202. (India.)
Banerjee, B., 1957, pp. 288-289. (India.)
1961, pp. 155-158. (India.)
1964, p. 445. (India.)
1965, pp. 435-436. (India.)
Bashir, N. A., 1963, pp. 48-49. (India, Punjab.)
Becker, G., 1962d, pp. 143-165. (India.)
1962e, pp. 359-379. (India.)
Bhatnagar, S. P., 1962, p. 223. (India, Rajasthan.)
Bindra, O. S., 1961, pp. 277-282. (India, Madhya Pradesh.)
Butani, D. K., 1961, pp. 767-768. (India, Bihar.)
Chatterjee, P. N., 1961, p. 1. (India.)
1963, p. 148. (India.)
Chatterjee, P. N., and Sen-Sarma, P. K., 1962, pp. 139-141. (India.)
1962a, pp. 822-826. (Burma.)
1963, pp. 280-285. (India.)
Chatterjee, P. N., and Thakur, M. L., 1963, pp. 171-203. (Indo-Malayan Region.)
1963a, pp. 635-637. (India.)
1964, pp. 1-6. (Kashmir.)
1964a, pp. 7-16. (India.)
1964b, pp. 149-162. (India.)
1964c, pp. 348-353. (North India.)
1964d, pp. 219-260. (Indian region.)
Chatterjee, P. N., and Thapa, R. S., 1963, pp. 20-26. (India.)
1964, pp. 210-214. (India.)
1964a, pp. 514-516. (India.)
Chatterji, S., and Sarup, P., 1962, pp. 5-12. (India.)
Chatterji, S., Sarup, P., and Chopra, S. C., 1960, pp. 356-357. (India.)
Chawala, D. R., 1965, pp. 11-12. (India.)
Cheema, P. S., Das, S. R., Dayal, H. M., Koshi, T., Maheshawari, K. L., Nigam, S. S., and Ranganathan, S. K., 1962, pp. 145-149. (India.)
Chen, Ning-Sen, 1959, pp. 1-17. (China.)
Chhotani, O. B., 1962, pp. 476-478. (India.)
1962a, pp. 73-75. (India.)
1963, pp. 287-288. (India.)
Chin, Chun-Teh, and Ma, Shih-Chun, 1959, p. 240. (China.)
Choudhuri, J. C. B., 1961, p. 125. (India.)
1963, pp. 189-192. (India.)
Das, G. M., 1957, pp. 8-9. (India.)
1962, pp. 229-231. (India.)
1963, pp. 4-8. (India.)
Das, N. R., Chandola, L. P., and Ramola, B. C., 1965, pp. 6-12. (India.)
Das, S. R., Maheshwari, K. L., Nigam, S. S., Shukla, R. K., and Tandon, R. N., 1962, pp. 163-165. (India.)
David, A. L., Kalyanaraman, V. M., and Narayanaswamy, P. S., 1964, p. 369. (India, Madras.)
Dayal, H. M., Nigam, S. S., and Saxena, M. S., 1965, p. 48-50. (India.)
Deoras, P. J., 1962, pp. 101-103. (India, Bombay.)
Desai, R. N., and Uttangi, J. C., 1962, pp. 110-114. (India.)
Dutt, N., 1962, pp. 217-218.
Fernando, H. E., 1962, pp. 205-210. (Ceylon.)
Fujii, N., 1964, pp. 213-216. (Japan.)
Fujii, N., Segawa, M., Ochiai, N., and Shimizu, K., 1962, pp. 7-11. (Japan.)

GENTRY, J. W., 1965, pp. 8-9. (Southwest Asia.)
GHOSE, S. K., 1964, pp. 87-91. (India.)
GIPE, R. F., 1963, p. 62. (Philippines.)
GOKHALE, N. G., SARMA, S. N., BHATTACHARYYA, N. G., *et al*, 1958. p. 229. (India.)
GUPTA, B. D., 1960, pp. 961-977. (India.)
GUPTA, R., and AGARWAL, M. K., 1963, pp. 285-287. (India.)
GUPTA, S. D., 1962, pp. 169-194. (India.)
1962a. pp. 195-222. (India.)
HALDAR, D. P., and CHAKRAVARTY, M. M., 1964a, pp. 77-81. (India.)
HARRIS, W. V., 1963, pp. 1-9. (Hong Kong.)
HOON, R. C., 1962, pp. 141-143. (India.)
HRDÝ, I., 1961b, pp. 557-565. (China.)
1963, pp. 75-85. (China.)
HSIA, KAI-LING, and FAN, SHU-TEH, 1965, pp. 360-382. (China.)
HUSSAIN, A. A., 1963, pp. 345-348. (Iraq.)
IKEHARA, S., (1957), 1963, pp. 9-14. (Ryukyu Islands.)
1961, pp. 1-3. (Japanese Archipelago.)
INDIAN COCONUT JOURNAL, 1962, pp. 155-156. (South East Asia and Pacific area.)
INDIAN COUNCIL OF AGRICULTURAL RESEARCH, 1957-1958, pp. 22-25. (India.)
INDIAN INST. SUGARCANE RES., 1962, p. 186. (India.)
INDIAN INST. SUGARCANE BREEDING, 1962a, p. 190. (India.)
JEN, DA-FONG, 1964, pp. 49-60. (China.)
JOSEPH, K. J., 1964, pp. 54-55. (India.)
JOSEPH, K. J., and MATHAD, S. B., 1963, pp. 379-386. (India.)
KALSHOVEN, L. G. E., 1962, pp. 121-137. (Java.)
1963, pp. 30-31. (W. New Guinea.)
1963a, pp. 90-99. (Indonesia and Malaya.)
1963c, pp. 223-229. (Indonesia.)
KAPUR, A. P., 1962, pp. 105-106. (India, Assam.)
KENJO, Y., 1963, pp. 132-134. (Japan.)
KETKAR, S. M., 1962, pp. 115-116. (India, Poona.)
KHALSA, H. G., NIGAM, B. S., and AGARWAL, P. N., 1964, pp. 341-344. (India.)
KIRTHINGHE, F., 1961, pp. 8-15. (Ceylon.)
KONDO, T., KUROTORI, S., TESHIMA, M., and SUMIMOTO, M., 1963, pp. 125-129. (Japan.)
KRISHNA, K., 1965, pp. 1-34. (Burma.)
KRISHNAMOORTHY, C., and RAMASUBBIAH, K., 1962, pp. 243-245. (India.)
KRISHNAMOORTHY, R. V., 1960, pp. 156-161. (India.)
KUSHWAHA, K. S., 1960, pp. 209-227; 229-250. (India.)
1961, pp. 229-230. (India, Rajasthan.)
1962, pp. 55-62. (India.)
1962a, pp. 71-114. (India.)
1963, pp. 296-310. (India.)
1964, pp. 105-107. (India.)
1964a, pp. 107-108. (India.)
MATHEN, K., KURIAN, C., and MATHEW, J., 1964, pp. 127-136. (India.)
MATHUR, R. N., 1962, pp. 137-139.
1962a, p. 281. (India.)
MATHUR, R. N., CHATTERJEE, P. N., and THAPA, R. S., 1965, pp.1-23. (India, Dehra Dun.)
MATHUR, R. N., and SEN-SARMA, P. K., 1961, p. 1-4. (Burma.)
1962, pp. 1-18. (India, Dehra Dun.)
1962a, pp. 7-12. (India.)
MATHUR, R. N., and SINGH, B., 1960, pp. 32, 34, 37, 41, 57, 73, 91, 110, 119, 136. (India and adjacent countries.)
1960a, pp. 27, 30, 34, 41, 47, 70, 75, 83, 105, 111. (India, and adjacent countries.)
1961, pp. 3, 6, 9, 14, 17, 21, 30, 33, 47, 57, 65, 72, 83, 85. (India and adjacent countries.)
1961a, pp. 15-16, 35, 49, 92, 97, 106. (India and adjacent countries.)
MATHUR, R. N., and THAPA, R. S., 1961, pp. 3-7. (South India.)
1962, pp. 49-52. (India.)
1962a, pp. 370-375. (India, Madras.)
1962b, pp. 4-8. (India.)
1962c, pp. 1-122. (India.)
MATSUZAWA, H., 1963, pp. 99-104. (Japan, Shikoku Island.)
MATSUZAWA, H., and TANI, S., 1962, pp. 247-248. (Japan, Shikoku.)
MENON, K. P. V., and PANDALAI, K. M., 1958, p. 282. (India.)
MISRA, J. N., 1964, pp. 131-136. (India.)
MUKERJI, D., and CHOWDHURI, R., 1962, pp. 77-95. (India.)
NAKAJIMA, S., SHIMIZU, K., and NAKAJIMA, Y., 1962, pp. 59-74. (Japan.)
1963, pp. 340-346. (Japan.)
1964, pp. 222-227. (Japan.)
NARAYANAMURTI, D., 1962, pp. 185-197. (India.)
NARAYANAMURTI, D., and GEORGE, J., 1961, pp. 667-669. (India.)
NARAYANAMURTI, D., PRASAD, B. N., and GEORGE, J., 1961, pp. 375-376. (India.)
NEWSAM, A., and RAO, B. S., 1963, p. 99.
PATEL, R. M., 1962, pp. 219-221. (India.)

PAUL, C. F., AGARWAL, P. N., and AUSAT, A., 1965, pp. 114-117. (India.)
PAWAR, J. G., and SOOD, N. K., 1964, pp. 17-19. (India.)
PRASHAD, B., and SEN-SARMA, P. K., 1959, pp. 1-66. (Indian region.)
1960, pp. 1-32. (India region.)
PRUTHI, H. S., and BATRA, H. N., 1960, p. 96. (North West India.)
PURUSHOTHAM, A., 1962, pp. 237-240. (India.)
RANAWEERA, J. W., 1962, pp. 88-103. (Ceylon.)
RAO, D. S., 1958, pp. 200-201. (India.)
RAO, K. P., 1962, pp. 71-72. (India.)
RATNASWAMY, M. C., 1961, pp. 341-344. (India.)
REDDY, D. B., 1962, pp. 225-227. (India.)
ROONWAL, M. L., 1962b, pp. 131-150. (India.)
ROONWAL, M. L., and BOSE, G., 1961, pp. 580-594. (India.)
1962, pp. 151-158. (India.)
1964, pp. VI-58. (India, Rajasthan.)
ROONWAL, M. L., and CHATTERJEE, P. N., 1961, pp. 67-78. (India, Dehra Dun.)
1962, pp. 211-212. (India.)
ROONWAL, M. L., CHATTERJEE, P. N., and THAPA, R. S., 1961, pp. 79, 116. (India.)
1962, pp. 183-184. (India.)
1962a, pp. 1-3. (India.)
ROONWAL, M. L., and CHHOTANI, O. B., 1961, p. 89-96. (Indian region.)
1962, pp. 57-63. (India.)
1962a, pp. 308-316. (Burma, Rangoon.)
1962b, pp. 281-406. (India, Assam region.)
1962c, p. 85. (India, Orissa.)
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1962e, pp. 159-168a. (India, Assam.)
1963, pp. 975-976. (India.)
1963a, pp. 265-273. (India.)
1964, pp. 45-52. (India.)
1964a, pp. 120-130. (India.)
ROONWAL, M. L., CHHOTANI, O. B., and BOSE, G., 1962, pp. 51-54. (India.)
ROONWAL, M. L., and GUHA-ROY, S., 1965, pp. 114-129. (India.)
ROONWAL, M. L., and MAITI, P. K., 1965, pp. 255-261. (India.)
ROONWAL, M. L., and SEN-SARMA, P. K., 1960, pp. 1-420. (Indo-Malayan.)
ROONWAL, M. L., and THAKUR, M. L., 1963, pp. 102-117. (Andaman Islands.)
ROORKEE, CENTRAL BUILDING RESEARCH INSTITUTE, 1965, pp. 686-687. (India.)
ROZANOV, B. G., 1963, pp. 63-67. (Burma.)
SAMSINAK, K., 1961, pp. 193-207. (China.)
SANKARAN, T., 1962, pp. 233-236. (India.)
SARUP, A., 1962, pp. 213-215. (India.)
SCHEERPELTZ, O., 1963, pp. 136-140. (East India.)
SEN-SARMA, P. K., 1962, pp. 292-297. (India, Dehra Dun.)
1963, pp. 1-10. (India.)
1963a, pp. 51-56. (India.)
SEN-SARMA, P. K., and CHATTERJEE, P. N., 1965, pp. 9-11. (India.)
1965a, pp. 805-813. (India.)
SEN-SARMA, P. K., and MATHUR, R. N., 1961, p. 252. (South India.)
SHARMA, R. C., 1964, pp. 28-30. (India, Rajasthan.)
SHIBAMOTO, T., 1962, pp. 2-4. (Japan.)
SHIMIZU, K., 1962, pp. 105-110. (Japan.)
1963, pp. 207-213. (Japan.)
SIDDIQI, Z. A., RAJANI, V. G., and SINGH, O. P., 1959, pp. 227-232. (India, Uttar Pradesh.)
SNYDER, T. E., and FRANCIA, F. C., 1962, pp. 63-77. (Philippines.)
SONTI, V. R., 1962, pp. 203-204.
SRIVASTAVA, A. S., GUPTA, B. P., and AWASTHI, G. P., 1962, pp. 241-242. (India.)
TANG, C., and LI, S., 1960, pp. 302-303. (China.)
TEOTIA, T. P. S., GUPTA, K. M., RAJANI, V. G., and GANGASAGAR, 1963, pp. 203-211. (India.)
TEOTIA, T. P. S., RAJANI, V. G., and SAGAR, G., 1963, pp. 33-38. (India.)
TEWARI, M. C., 1961, pp. 10-13. (India.)
TSAI, PANG-HUA, and CHEN, NING-SHENG, 1963, pp. 167-198. (South China.)
1964, pp. 25-37. (China.)
TSAI, PANG-HWA, CHEN, NING-SHENG, CHEN, AN-KUO, and CHEN, CHIH-HWEI. 1965, pp. 53-70. (China.)
1965a, pp. 128-139. (China.)
UICHANCO, L. B., 1961, pp. 215-218 (Philippines.)
UTHAISILP, C., 1962, pp. 417-422. (Thailand.)
1962a, pp. 493-502. (Thailand.)
UTTANGI, J. C., and DESAI, R. N., 1962, pp. 97-109. (India.)
1963, pp. 39-43. (India.)
UTTANGI, J. C., and JOSEPH, K. J., 1962, pp. 155-161.
VISHNOI, H. S., 1962, pp. 13-30. (India.)
1962a, pp. 107-109. (India, Delhi.)
WEIDNER, H., 1962, pp. 129-133. (Burma.)
YOKOE, Y., 1964, pp. 115-120. (Japan.)
YU, C. W., and PING, C. M., 1964, pp. 10-24. (China.)
1964a, pp. 344-361. (China.)
YUNUS, E. A., 1960, pp. 255-260. (Malaya.)

ZOOGEOGRAPHICAL REGIONS: MALAGASY

PAULIAN, R., 1961, pp. 138, 385. (Malagasy.)
1962, p. 275. (Tananarive.)

ZOOGEOGRAPHICAL REGIONS: NEARCTIC

ABUSHAMA, F. T., 1964a, pp. 145-147.
ALLEN, T. C., ESENTHER, G. R., and LICHTENSTEIN, E. P., 1964, pp. 26-29. (U.S., Wisconsin, Madison.)
ALLEN, T. C., ESENTHER, G. R., and SHENEFELT, R. D., 1961, pp. 1065-1066. (U.S., Wisconsin.)
ANONYMOUS., 1937, p. 123.
1961a, pp. 46, 48. (U.S.)
1961b, p. 20. (U.S.)
1961c, p. 40. (U.S.)
1961d, pp. 5-7, 10-11, 14-15, 18-19, 20-21. (U.S.)
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Armed Forces Pest Control Board, 1963, pp. 1-14. (U.S.)

Ballantyne, W. J., 1964, pp. 50, 52, 54. (U.S., Illinois, Chicago.)

Banks, F. A., 1946, pp. i-iii, 1-28. (Eastern U.S.)

Beal, R. H., and Kais, A. G., 1962, pp. 488-489. (U.S.)

Beal, R. H., and Smith, V. K., 1964, p. 771. (U.S., Mississippi.)

Bell, J. L., 1965, pp. 46, 52. (U.S., Missouri.)

Bernard, C., 1962, pp. 8, 10-11. (U.S., California.)

Berzai, L. J., 1964, p. 46. (U.S., Indiana.)

Blew, J. O., Jr., 1962, pp. 1-9. (U.S.)
1963, pp. 1-9. (U.S.)
1964, pp. 1-9. (U.S.)

Blew, J. O., and Kulp, J. W., 1962, pp. 1-15. (U.S., Mississippi.)
1963, pp. 1-15. (U.S., Mississippi.)
1964, pp. 1-15. (U.S., Mississippi.)
1965, pp. 1-15. (U.S., Mississippi.)
1965p, pp. 1-9. (U.S.)

Borror, D. J., and DeLong, D. M., 1964, pp. 56, 62, 65, 118-124. Chap. 10, Order Isoptera, p. 489, 657, 665, 720-721. (U.S.)

Bready, J. K., pp. 1039-1040. (U.S.)

Bready, J. K., and Friedman, S., 1963, pp. 337-347. (U.S.)
1963a, pp. 703-706. (U.S.)
1963b, pp. 706-708. (U.S.)

Brock, T. S., 1965, pp. 42, 44. (U.S., Mississippi.)

Brownstein, P. N., 1962, pp. 9, 11, 12. (U.S.)

Bruce, E. L., Co., Inc., 1963, pp. 1-2. (U.S.)

California PCOs, 1962, pp. 3, 4, 12. (U.S., California.)

California Structural Pest Control Board, 1962, pp. 12-13. (U.S., California.)
1962a, pp. 12-13. (U.S., California.)
1963, pp. 12-13. (U.S., California.)
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1965c, pp. 12-13. (U.S., California.)
1965d, p. 10. (U.S., California.)
1965e, pp. 20-21. (U.S., California.)
1966, p. 65. (U.S., California.)

Cancienne, E. A., 1961, pp.1-8. (U.S., Louisiana.)

Chemical Specialties Manufacturers Association, 1961, pp. loose leaf to be added to. (U.S.)

Chisholm, R. D., Koblitsky, L., and Westlake, W. E., 1962, pp. 1-8. (U.S.)
1962a, pp. 48, 50, 52-53, 66. (U.S.)

Clark, B., 1963, pp. 18, 20, 22, 24. (U.S., Ohio, Cleveland.)

Clements, W. B., 1963, pp. 54, 56. (U.S.)

Cleveland, L. R., 1960b. *In* Stauber 1960, pp. 5-10. (U.S.)

Coleman, V. R., 1966, pp. 32, 34, 36, 38. (U.S., Southern Piedmont Region.)

Collins, M. S., and Richards, A. G., 1962, p. 514. (U.S., eastern.)
1963, pp. 600-604. (U.S., eastern.)

Connecticut University College of Agriculture Extension Serv., 1964, p. 1. (U.S., Connecticut.)

Conner, F. B., 1965, pp. 28, 32, 34. (U.S., Washington, D.C.)

Connors, J., 1963, p. 2B. (U.S., Florida, Hialeah.)

Davenport, D., 1966, p. 8. (U.S., Nebraska, Ashland.)

Decker, G. C., Bruce, W. N., Bigger, J. H., 1965, pp. 166-171. (U.S., Illinois.)

Dreisbach, R. H., 1961, pp. 1-460. (U.S.)

Duchanois, F. R., 1961, pp. 42, 44, 46, 55. (U.S., Florida.)

DuRant, J. A., and Fox, R. C., 1966, pp. 202-207. (U.S., South Carolina.)

Dyer, T. A., 1966, p. 61. (U.S., Florida.)

Ebeling, W., 1962, pp. 451-454. (U.S.)

Ebeling, W., and Pence, R. J., 1965, pp. 1-16. (U.S., California.)

Ebeling, W., and Wagner, R. E., 1961, pp. 1, 4. (U.S., California.)
1962, pp. 16, 18, 20. (U.S., California.)
1963, pp. 14-17. (U.S., California.)
1964, pp. 20-22, 24, 26, 28, 31-32. (U.S., California.)

Ehman, N., 1963, pp. 18-19. (U.S., California.)

Esenther, G. R., 1961, pp. 945-946. (U.S., Wisconsin.)

Esenther, G. R., Allen, T. C., Casida, J. E., and Shenefelt, R. D., 1961, p. 50. (U.S.)

Falls, O., 1938, p. 18. (U.S.)

Federal Housing Administration, 1963, pp. 1-500. (U.S.)
1966, pp. 1-4. (U.S.)

Fishbein, W. I., White, J. V., Isaacs, H. J., 1964, pp. 726-727. (U.S.)

Fleming, W. E., Parker, L. B., Maines, W. W., Plasket, E. L., and McCabe, P. J., 1962. pp. 1-44. (U.S.)
Floyd, J., 1965, pp. 46, 49, 50. (U.S., Illinois.)
Frings, H., and Frings, M., 1962, pp. 13-20. (U.S.)
Fulton, R. A., Smith, F. F., Busbey, R. L., 1962, pp. 1-15. (U.S.)
1964, pp. 1-12. (U.S.)
Giles, D. T., 1962, pp. 5-7. (U.S., Washington, D.C.)
Goulding, R. L., and Every, R. W., 1965, pp. 376-383. (U.S., Oregon.)
Green, N., Beroza, M., and Hall, S. A., 1960, pp. 129-179. (U.S.)
Gunn, W. C., 1964, pp. 50, 52, 54, 56. (U.S., California.)
Hall, D. G., 1966, p. 8. (U.S., Georgia.)
Hamilton, J. R., and Cobb, J. B., 1964. (U.S., Georgia.)
Hassler, R. K., 1961, pp. 12, 14. (U.S.)
Hayes, W. J., Jr., 1963, pp. 1-144. (U.S.)
Heal, R. E., 1964, pp. 82-84. (U.S.)
Heaton, S. S., 1966, pp. 28a, 28b, 29-30. (U.S., California.)
Helfer, J. R., 1963, pp. 63-80. (North America.)
Hetrick, L. A., 1962, pp. 270-271. (U.S., Florida.)
Hodel, C., 1962, p. 10. (U.S., California.)
Ingle, L., 1965, pp. 1-88. (U.S.)
Internal Revenue Service, 1963. (U.S., Revenue Ruling 63-232, Nov. 12.)
Isherwood, H., 1963, pp. 8-10. (U.S.)
1965, pp. 78, 80. (U.S., Missouri.)
Jacobson, M., 1965, pp. 32, 38. (U.S.)
James, F. R., 1962, pp. 129-133, 180. (U.S.)
Johnston, H. R., 1963, p. 27. (U.S., Mississippi, Gulfport.)
1965, pp. 34-37. (U.S.)
1965a, p. 687. (U.S., Mississippi.)
Katz, H., 1962, p. 60, (U.S.)
1962a, pp. 44, 46. (U.S.)
1962b, p. 44. (U.S.)
Kerr, E., 1962, pp. 8-13. (U.S.)
Kirby, C. S., 1965, pp. 310-314. (Canada, Ontario.)
Kirby, C. S., and Harnden, A., 1963, p. 1. (Canada, Ontario.)
Kirby, J. L., 1961, pp. 69-71. (U.S., New Jersey.)
Krupnick, E., 1961, pp. 42, 44. (U.S.)
Lance, W. D., 1962, p. 16. (U.S., Florida.)
Laws, E. R., 1966, pp. 8-10. (U.S.)
Lichtenstein, E. P., Schulz, K. R., and Cowley, G. T., 1963, pp. 485-489. (U.S.)
Lund, A. E., 1962, pp. 30-34, 36, 60-61. (U.S.)
1963, p. 78. (U.S.)
1965, pp. 22, 24. (U.S.)
Lund, A. E., and Engelhardt, N. T., 1962, pp. 131-132. (U.S.)
Lund, H. O., 1961, pp. 58-60. (U.S.)
Lyon, S. R., 1963, pp. 46, 48, 50. (U.S., Arizona.)
Lyons, F. H., 1964, p. 52. (U.S.)
MacNay, C., 1961, pp. 135-136. (Ottawa, Ontario, Canada.)
1963, p. 105. (Ontario, Canada.)
McLean, L. A., 1962, pp. 1-19. (U.S.)
McMahan, E. A., 1963, pp. 74-82. (U.S.)
1963a, pp. 32-34, 36. (U.S.)
Mallis, A., 1964, pp. 219-324. (U.S.)
Manns, M., 1963, pp. 9, 11, 12, 14, 63. (U.S.)
Manuel, W. W., 1964, pp. 20-22. (U.S., California.)
Marshall, C. W., 1966, pp. 72, 74, 76. (U.S.)
Meikle, R. W., and Stewart, D., 1962, pp. 393-397. (U.S.)
Meikle, R. W., Stewart, D., and Globus, O. A., 1963, pp. 226-230. (U.S., California.)
Merrick, G. D., 1961, pp. 219-253. (U.S.)
1962, pp. 253-287. (U.S.)
1963, pp. 235-269. (U.S.)
1964, pp. 201-235. (U.S.)
1965, pp. 267-301. (U.S.)
Metcalf, R. L. (Ed.) 1965, pp. 1-6289. (U.S.)
Michelbacher, A. E., 1965, pp. 207-234. (U.S., California.)
Moore, A. D., 1964, pp. 1-3. (U.S., Maryland, Beltsville.)
Moore, H. B., 1963, p. 103. (U.S., North Carolina.)
Morris, W. J., 1963, pp. 44, 46. (U.S., Ohio, Kent.)
Mumford, B. C., 1964, pp. 1-76. (U.S.)
1965, pp. 1-76. (U.S.)
1966, pp. 1-88. (U.S.)
Nash, L. M., 1964, pp. 54-56. (U.S.)
Nolan, T., 1962, pp. 48, 52. (U.S., Florida, Miami.)
Nutting, W. L., 1965, pp. 113-125. (U.S., Arizona.)
1965a, pp. 5-10. (U.S., Southwest; northern Mexico.)
O'Brien, R. E., Reed, J. K., and Fox, R. C., 1965, pp. 14-15, 42, 44. (U.S.)
Ogle, J. A., Jr., 1962, pp. 82, 84-86. (U.S., California.)
Oregon, State Univ., Federal Coop. Ext. Serv., 1962, pp. 1-6. (U.S., Oregon.)
Payne, J. A., and Crossley, D. A., Jr., 1966, p. 44. (U.S., Tennessee.)
Phelps, A., 1965, p. 705. (U.S.)
Prestage, J. J., Slifer, E. H., and Stephens, L. B., 1963, pp. 874-878. (U.S.)

Ratner, H., 1963, pp. 38, 40, 42. (U.S., New Jersey.)
Reno, J., 1962, pp. 26, 28. (U.S.)
1962a, p. 30. (U.S.)
1962b, pp. 32, 33. (U.S.)
1962c, pp. 1-4. (U.S.)
Reynolds, W. B., Jr., 1963, p. 426. (U.S., Florida, Hialeah.)
Richmond, E. A., 1962, p. 77. (U.S., Mississippi, Horn Island.)
Ritter, H., 1964, pp. 1459-1460. (U.S.)
Ross, G. M., 1962, pp. 60, 62. (U.S., Florida, Tampa.)
St. George, R. A., Johnston, H. R., and Kowal, R. J., 1963, pp. 1-30. (U.S.)
Saxam, O., 1961, pp. 1-63. (U.S.)
Scherzinger, B. C., 1962, p. 66. (U.S.)
Schuler, S., 1964, pp. 124-126, 220, 224. (U.S.)
Scott, H. G., 1961, p. 46. (North America.)
Scott, K., 1964, p. 23. (U.S., California.)
Senske, W. M., 1966, p. 24. (U.S., Washington.)
Shell Chemical Co., 1962, p. 62. (U.S.)
1963, pp. 1-11. (U.S.)
Smith, B. L., 1965, pp. 40, 43-44. (U.S., midwest.)
Smith, D. N., 1964, pp. 1-11. (British Columbia.)
Smith, H. M., 1957, p. 102.
Smith, R. F., 1965, pp. 235-258.
Smith, V. K., 1961, p. 60. (U.S.)
Smith, V. K., and Johnston, H. R., 1962, p. 1-7. (U.S.)
Smythe, R. V., Allen, T. C., and Coppel, H. C., 1965, pp. 420-423. (U.S., Wisconsin.)
Smythe, R. V., and Coppel, H. C., 1964, pp. 133-135. (U.S., Wisconsin.)
1965, pp. 423-426. (U.S., Wisconsin.)
Snyder, T. E., 1963b, pp. 175-179. (U.S., eastern.)
1966, p. 73. (U.S.)
1966a, p. 231. (U.S.)
Spear, P. J., 1962, pp. 1-3. (U.S.)
1966, p. 80. (U.S.)
Spencer, G. J., 1963, p. 18. (Canada.)
Stein, W. J., and Hayes, W. J., 1964, pp. 549-555. (U.S.)
Stewart, D., 1962, pp. 24, 26, 28. (U.S., California.)
Stewart, D., and Meikle, R. W., 1964, pp. 2, 14, 15, 16. (U.S., California.)
Sundin, B., 1963, pp. 12-13. (U.S., California.)
Sundlov, W. A., 1964, pp. 11-15, 17-18. (U.S.)
Sweetman, H. L., 1965, pp. 1-371. (U.S.)
Thurman, E. B., 1913, pp. 213-216. (U.S.)
Tietz, H. M., 1963, p. 116. (North America.)
Townsend, R. F., 1964, pp. 13-19. (Western U.S.)
Truman, L. C., 1962, pp. 27-34. (U.S.)
1962a, pp. 39-46. (U.S.)
Turner, N., 1961, pp. 1-12. (U.S., Connecticut.)
U.S. Dept. Agriculture, Agricultural Research Service, 1964, pp. 1-6. (U.S.)
U.S. Dept. Agriculture, Forest Service, 1961, pp. 1-8. (U.S.)
U.S. Dept. Agriculture, Plant Pest Control Div., 1962a, p. 261. (U.S., Arkansas, Fort Smith.)
1962b, pp. 1053, 1063. (U.S., California.)
1962c, p. 1172. (U.S., Maryland, Bethesda.)
1962d, p. 1217. (U.S., Iowa, Storm Lake.)
1962e, p. 1252. (U.S., Maryland, Kensington.)
1962f, p. 1252. (U.S., Ohio, Loudonville.)
1963b, p. 119. (U.S., Texas, San Antonio.)
1963c, p. 310. (U.S., California.)
1963d, p. 533. (U.S., Nevada.)
1963f, p. 1087. (U.S., Ohio.)
1963g, p. 1120. (U.S., North Dakota.)
1963h, p. 1140. (U.S., California.)
1963i, p. 1178. (U.S., California.)
1963k, p. 1219. (U.S., Pennsylvania, Philadelphia.)
1963l, p. 1264. (U.S., Alabama.)
1963m, p. 1368. (U.S., Alabama.)
1964b, p. 319. (U.S., Illinois.)
1964c, p. 340. (U.S., Delaware.)
1964d, p. 360. (U.S., Florida, Maryland.)
1964e, p. 363. (U.S., Nevada.)
1964f, p. 953. (U.S., California.)
1964g, p. 1131. (U.S., Florida.)
1964h, p. 1164. (U.S., California.)
1964i, p. 1186. (U.S., Alabama.)
1964j, p. 1190. (U.S., Alabama.)
1964k, p. 1192. (U.S., Florida.)
1964l, p. 1242. (U.S., Arizona.)
1965, p. 241. (U.S., California.)
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1965f, p. 456. (U.S.)
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1965h, p. 519. (U.S.)
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1965j, p. 586. (U.S.)
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1965l, p. 655. (U.S., North Carolina.)
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1965p, p. 884. (U.S., Texas.)

1965r, pp. 907-908. (U.S., Texas.)
1965s, p. 944. (U.S., South Dakota.)
1965t, p. 981. (U.S., California.)
1965u, p. 1002. (U.S., California.)
1965v, p. 1015. (U.S.)
1965w, p. 1050. (U.S.)
1965x, p. 1078. (U.S., Missouri.)
1965y, p. 1080. (U.S., Wisconsin.)
1965z, p. 1081. (U.S., Oregon.)
1965a[1], p. 1081. (U.S., Texas.)
1965c[1], p. 1125. (U.S., Delaware.)
1965d[1], p. 1184. (U.S., Ohio.)
1965e[1], p. 1235. (U.S., South Carolina.)
1965f[1], p. 1248. (U.S., Oklahoma.)
1965g[1], p. 1264. (U.S., Oklahoma.)
1965h[1], p. 1265. (U.S., North Carolina.)
1965i[1], p. 1346. (U.S., California.)
1965j[1], p. 1346. (U.S., Oregon.)
1966, p. 18. (U.S., Alabama, Maryland.)
1966a, p. 53. (U.S., Oklahoma.)
1966b, p. 68. (U.S., Oklahoma.)
1966d, p. 96. (U.S., Texas.)
1966e, p. 101. (U.S., Texas.)
1966f, p. 122. (U.S., Oklahoma.)
1966g, p. 174. (U.S., Maryland.)
1966h, p. 202. (U.S.)
1966i, p. 222. (U.S., Indiana.)
1966j, p. 223. (U.S.)
1966n, pp. 311, 325-326. (U.S.)
1966o, p. 342. (U.S.)
1966p, p. 394. (U.S.)
1966q, p. 417. (U.S., North Carolina.)
U.S. Dept. Agriculture, Plant Quarantine Div., 1962, pp. 18, 25, 32, 36, 42. (U.S.)
U.S. Public Health Service, 1965, pp. 1-40. (U.S.)
Wagner, R. E., and Ebeling, W., 1964, pp. 24-25. (U.S., California.)
Ward, J. C., 1962, pp. 9, 11-12, 14-15. (U.S.)
Watanabe, T., and Casida, J. E., 1963, pp. 300-307. (U.S.)
Webb, J., 1963, pp. 84, 86, 88. (U.S., Newark, Delaware.)
Weesner, F. M., 1965, pp. 1-71. (U.S.)
1966, pp. 19-20, 53-56. (Western U.S.)
West, I., and Kleinman, G., 1964, p. 21. (U.S., California.)
Wheeler, G. C., and Wheeler, J., 1963, pp. 190-193. (U.S., North Dakota.)
Whitney, W. K., 1961, pp. 16-21. (U.S.)
Wright, N. L., 1962, pp. 48, 50, 52. (U.S., North Carolina.)
Yendol, W. G., 1965, p. 4881. (U.S., Indiana.)
Yendol, W. G., and Paschke, J. D., 1965, pp. 414-422. (U.S., Indiana.)

ZOOGEOGRAPHICAL REGIONS: NEOTROPICAL

Amante, E., 1962, pp. 133-138. (Brazil.)
Araujo, R. L., 1961, pp. 105-111. (Brazil.)
Beebe, W., 1924, p. 101. (Galapagos, Eden.)
Blew, J. O., Jr., 1962, pp. 1-9. (Canal Zone, Panama.)
1963, pp. 1-9. (Canal Zone, Panama.)
1964, pp. 1-9. (Canal Zone, Panama.)
Blew, J. O., Jr., and Kulp, J. W., 1965a, pp. 1-9. (Canal Zone, Panama.)
Borgmeier, T., 1959, pp. 289-308. (Costa Rica, Brazil.)
Ciferri, R., 1963, pp. 235-252. (Dominican Republic, West Indies.)
Cruz, B. P. B., Figueiredo, M. B., Almeida, E., 1962, pp. 189-195. (Brazil.)
Dini, W., and Cesar, H. C., 1960, pp. 403-407. (Brazil.)
Dourojeanni Ricordi, M., 1965, p. 29. (Peru.)
Dresner, E., 1960, pp. 24-25. (South America.)
Dybas, H. S., 1961, pp. 57-62. (Bolivia.)
Eisenmann, E., 1961, pp. 636-638. (Panama Canal Zone, Barro Colorada Island.)
Emerson, A. E., and Banks, F. A., 1965, pp. 1-33. (South America.)
Gonçalves, C. R., and Silva, A. G. A., 1962, pp. 193-208. (Brazil.)
Goodland, R. J. A., 1965, pp. 641-650. (British Guiana.)
Guagliumi, P., 1962, pp. 405-409. (Venezuela.)
Guzman, S. R., 1960, pp. 73-77. (Chile.)
1961, pp. 83-96. (Chile.)
1962, pp. 57-63. (Chile.)
Hurd, P. D., Jr., Smith, R. F., Durham, J. W., 1962, pp. 107-118. (Mexico, Chiapas, Oligocene.)
Jakobi, H., and De Loyola, E., Silva, J., 1959, pp. 113-117. (Brazil.)
Krishna, K., 1962, pp. 1-13.
Langenheim, J. H., and Beck, C. W., 1965, pp. 52-54. (Mexico, Chiapas.)
Linsley, E. G., and Usinger, R. L., 1966, pp. 125-126. (Galápagos Islands.)
Nelson, R. H., 1965, p. 770. (Brazil.)
Ortiz Cespedes, M. R., 1964, pp. 21-22.
Ramsden, C. B., 1962, pp. 48, 50. (Mexico, Mexicali.)
Reiniger, C. H., 1953, pp. 21-22. (Brazil.)
Souza Lopes, H. De., 1941, p. 642. (Brazil.)

Vieco, H. A., 1962, pp. 1-64. (Colombia.)
Williams, R. M. C., 1965, pp. 675-676. British Honduras.)
1965a, pp. 1-31. (British Honduras.)
Wolcott, G. N., 1953, pp. 1-5. (Puerto Rico.)

ZOOGEOGRAPHICAL REGIONS: PALAEARCTIC

Abushama, F. T., 1964, pp. 148-150. (England.)
Anonymous, 1961, pp. 1-9. (Italy.)
1961b, p. 20. (Europe.)
Becker, G., 1961a, pp. 78-94. (Germany.)
1961b, pp. 1-7. (Germany.)
1962, p. 232. (Germany.)
1962b, pp. 95-109. (Germany.)
1962c, pp. 17-40. (Germany.)
1962f, pp. 476-486. (Germany.)
1963a, pp. 455-456. (Germany.)
1963c, pp. 286-295. (Germany.)
1964a, pp. 168-172. (Germany.)
Becker, G., and Burmester, A., 1962, pp. 416-426. (Germany.)
Becker, G., and Puchelt, D., 1961, pp. 110-116. (Germany.)
Bei-Beinko, G. Ya., 1964, pp. 174-176. (S.S.S.R., European.)
Bernard, J., 1964, pp. 83-95. (Tunis.)
Bernardini, P., and Palestra, A. M., 1956, pp. 727-734. (Italy.)
Buchli, H., 1961, pp. 628-632. (France.)
Beuerle, O. K., 1961, pp. 150-152. (Austria.)
Bonaventura, G., 1961, pp. 237-254. (Italy.)
1963, pp. 9-19. (Italy.)
Cabral, J. DeS. M. N., 1959, pp. 28-29. (Portugal.)
Cals-Usciati, J., and Frescheville, J. De., 1963, p. 54. (France, Paris.)
Conrad, G., 1959, pp. 2089-2091. (Algeria.)
Coudreau, J., Fougerousse, M., Bressy, O., and Lucas, S., 1960, pp. 40-51. (France.)
Damaschke, K., and Becker, G., 1964, pp. 157-160. (Germany.)
Davletshina, A. G., 1963, p. 74-83. (U.S.S.R., Golodnaya steppe.)
Desportes, I., 1963, pp. 4013-4015.
Dozinskii, V. A., 1962, pp. 84-87. (Ukraine.)
Drift, J. W. P. T. Van Der., 1962, pp. 24-28. (Europe.)
Duperon, P., Hügel, M. F., Sipal, Z., Barbier, M., 1964, pp. 257-262. (France.)
Ernst, E., 1961. (Switzerland.)
Gallo, P., 1961, pp. 214-220. (Italy.)
Gharagozlou, I., 1962, pp. 2430-2432. (France.)
1962a, pp. 174-176. (France.)
Ghilarov, M. S., 1962a, pp. 131-135. (U.S.S.R.)
Gösswald, K., 1962, pp. 169-178. (Germany.)
1962a, pp. 605-610. (Germany.)
Gösswald, K., and Kloft, W., 1961, pp. 7-12. (Germany.)
1963, pp. 25-42. (Germany.)
Grassé, P. P., and Gharagozlov, I., 1963, pp. 3546-3548. (France.)
1964, pp. 1045-1047. (France.)
Grassé, P. P., and Hollande, A., 1963, pp. 749-792. (Algeria.)
Grassé, P. P., and Noirot, C., 1960, pp. 109-123. (France.)
1960a, pp. 323-331. (France.)
Harris, W. V., 1953, pp. 13-14. (St. Helena.)
1962, pp. 614-617. (Europe.)
1964, pp. 171-172. (Israel.)
1964b, pp. 479-481. (Saudi Arabia.)
Herlant-Meewis, H., and Pasteels, J. M., 1961, pp. 3078-3080. (France.)
Hickin, N. E., 1961, pp. 84-86. (England.)
1961a, pp. 205-206. (England.)
1963, pp. 267-284. (Europe.)
Hrdý, I., 1961, pp. 41-50. (Czechoslovakia.)
1961a, pp. 546-556. (Czechoslovakia.)
1961c, pp. 97-107. (Europe.)
1961d, pp. 133-148. (Europe.)
1963, pp. 75-85. (Czechoslovakia.)
Hrdý, I., and Novak, V. J. A., 1960, pp. 222-225. (Czechoslovakia.)
Jacquiot, C., 1961, pp. 151-164. (France.)
Jacquiot, M. C., 1965, pp. 623-625. (France.)
Koover, J., 1964, pp. 2887-2889.
1964a, pp. 491-510.
Krause, E., 1962, pp. 162-163. (Germany.)
Kurir, A., 1962, pp. 1-8. (Europe.)
1963a, pp. 101-107. (Austria.)
Langendorf, G., 1961, pp. 158-159. (Southern Europe.)
Lebrun, D., 1961, pp. 235-242.
1964, pp. 4152-4155. (France.)
Losinsky, W. A., 1958. (South Ukraine.)
1962, pp. 84-87. (Ukraine.)
Lüscher, M., 1959, pp. 161-166. (Europe.)
1961a, pp. 57-67. (Europe.)
1962, pp. 1-11. (Europe.)
1963, pp. 244-250. (Europe.)
1963a, pp. 1-11. (Europe.)
1964, pp. 79-90. (Europe.)
Luppova, A. N., 1962, pp. 103-109. (S.S.R.)
1963, pp. 17-27. (Transcaspia.)
Manier, J. F., 1960, pp. 677-686. (France.)
Marechek, G. I., 1963, pp. 49-73. (U.S.S.R.)
Martínez, J. B., 1960, pp. 1-83. (Spain.)
1963, pp. 1-119. (Spain.)

Mathieu, H., 1962, pp. 97-103. (Europe.)
Mendes, M. A., 1959, pp. 136-137. (Portugal.)
Mosconi, P. B., 1963, pp. 22-28. (Italy.)
Fudalewicz-Niemczyk, W., 1965, pp. 241-252.
Noirot, C., and Noirot-Timothée, C., 1965, p. 129. (France.)
Osman, M. F. H., and Kloft, W., 1961, pp. 383-395. (Germany.)
Prota, R., 1962, pp. 1-35. (Sardinia.)
Rescia, G., 1960, pp. 89-109. (Italy.)
1960a, pp. 115-135. (Italy.)
1960b, pp. 141-145. (Italy.)
1963, pp. 123-133. (Italy.)
Rescia, G., and Bonaventura, G., 1961, p. 260. (Italy.)
Ricci, P., 1961, pp. 260-262. (Italy.)
1961a, pp. 262-263. (Italy.)
Rose, M., Arces, P. J. D'., and Mazzella, O., 1960, pp. 1-39. (Algeria.)
Rudakova, A. K., 1962, pp. 88-94. (S.S.R.)
Rudnev, D. F., 1963, pp. 127-131. (Italy.)
Rui, D., 1963, pp. 146-152. (Italy, Venice.)
Ruppli, E., and Lüscher, M., 1964, pp. 626-632. (Europe.)
Sampaio, E. J. F., 1960, pp. 1-8. (Portugal.)
1963, pp. 32-41. (Portugal.)
Schmidt, H., 1961, pp. 8-11. (Germany.)
1963, pp. 20-23. (Germany.)
Schultze-Dewitz, G., 1960, pp. 64-68. (Germany.)
1960a, pp. 365-367, 413-415, 445-446. (Germany.)
1961, pp. 29-31. (Germany.)
1963, pp. 24-31. (Germany.)
1965, pp. 127-134. (Germany.)
Sebald, M., and Prevot, A. R., 1962, pp. 199-214. (France.)
Seifert, K., 1962, pp. 161-168. (Germany.)
1963, pp. 85-96. (Germany.)
Semedo, C. M. B., 1961, pp. 101, 105. (Portugal.)
Sen-Sarma, P. K., 1963b, pp. 57-65. (Europe.)
Snyder, T. E., 1963a, p. 13. (Britain.)
Giordani-Soika, A., 1963, pp. 42-46. (Italy, Venice.)
Soliman, A. A., 1964, pp. 305-307. (Egypt.)
Spaeth, V. A., 1964, pp. 27-33. (Israel.)
Springhetti, A., 1963, pp. 391-393. (Italy.)
1963a, pp. 155-159. (Italy.)
1963b, pp. 105-122. (Italy.)
Steinberg, D. M., 1962, pp. 11-16. (Central Asia.)
1962a, pp. 37-48. (Central Asia.)
Stirn, J., 1963, pp. 239-269. (Yugoslavia.)
Theden, G., and Becker, G., 1961, pp. 376-409. (Germany.)
Truckenbrodt, W., 1964, pp. 359-434. (Germany.)
Tsvetkova, V. P., 1950, pp. 95-96. (U.S.S.R.)
1963, pp. 28-36. (U.S.S.R., south of Ukraine.)
U.S. Dept. Agriculture, Plant Pest Control Div. Coop. Econ. Insect Rep., 1962, p. 47. (Afghanistan.)
Verron, H., 1963, pp. 167-335. (France.)
Vité, J. P., 1952, pp. 127-128. (Central Europe.)
Weiser, J., and Hrdý, I., 1962, pp. 94-97. (Europe.)

ZOOGEOGRAPHICAL REGIONS: PAPUAN

Anonymous., 1963, p. 50. (Hawaii, Honolulu.)
1965i, p. 61. (Hawaii, Hilo.)
Ardley, J. H., Clifford, L. T., and Gay, F. J., 1965, pp. 680-681. (New Guinea.)
Bess, H. A., 1964, 1964, p. 351. (Hawaii, Honolulu.)
1965, p. 1. (Hawaii, Honolulu.)
Butler, G. D., 1961, p. 381. (Laysan Island.)
Clagg, C. F., 1965, p. 3. (Hawaii, Oahu.)
1965a, p. 15. (Guam.)
Conroy, W. L., 1963, pp. 85, 86. (Lae, New Guinea.)
Gay, N., 1963a, pp. 421-423. (New Guinea.)
Given, B. B., 1964, pp. 25-26. (Cook Islands, Suvorov.)
Hallsted, C. T., 1965, pp. 16-17. (Hawaii.)
Krauss, N. L. H., 1961, p. 415. (Cook Islands, Aitutaki.)
1965, pp. 2-4. (Hawaii, Oahu.)
McMahan, E. A., 1961, p. 2414. (Hawaii.)
1962, pp. 145-153. (Hawaii.)
Pemberton, C. E., 1964, pp. 689-729. (Hawaii.)
1965, pp. 39-45. (Hawaii.)
Smee, L., 1962, pp. 193-194. (Papua and New Guinea.)
1963, pp. 1-19. (New Britain, New Ireland.)
1964, p. 27. (Papua and New Guinea.)
Szent-Ivany, J. J. H., 1961, pp. 127-147. (Papua and New Guinea.)
1963, pp. 37-43. (Papua and New Guinea.)
Thomas, R. T. S., 1962, pp. 57-58. (Dutch New Guinea.)
U.S. Dept. Agriculture, Plant Pest Control Div. Coop. Econ. Insect Rep., 1963e, p. 698. (Hawaii, Maui.)
1963n, p. 1416. (Hawaii.)
1964, p. 150. (Hawaii, Oahu.)

1964a, p. 222. (Hawaii, Maui.)
1965o, p. 273. (Hawaii, Hilo.)
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1966c, p. 75. (Hawaii, Hawaii, Hilo, Oahu, Honolulu.)
1966m, p. 286. (Hawaii, Oahu, Honolulu.)

ZOOGEOGRAPHICAL REGIONS: GENERAL

Ablin, R. J., 1964, pp. 16-17.
Alam, S. M., 1962, pp. 63-65.
1965, pp. 441-442.
Alibert, J., 1964, pp. 5260-5263.
Allen, T. C., Smythe, R. V., and Coppel, H. C., 1964, pp. 1009-1011. (General.)
Anonymous., 1964x, pp. 28, 30, 32. (Worldwide.)
1966d, pp. 86-92. (General.)
Baccetti, B., 1963, pp. 230-255. (General.)
Bakshi, B. K., 1962, pp. 117-119.
Bano, Z., Ahmed, R., and Shrivastava, H. C., 1964, pp. 380-381. (General.)
Becker, G., 1961, pp. 278-290. (General.)
1962a, pp. 215-222. (General.)
1963, pp. 1-4. (General, tropics.)
1963b, pp. 132-145. (General.)
1964, pp. 75-88. (General.)
1965, pp. 151-184. (General.)
1965a, pp. 95-156. (General.)
1965b, pp. 385-398. (General.)
1965c, pp. 464-478. (General.)
Becker, G., and Kerner-Gang, W., 1964, pp. 429-448. (General.)
Becker, G., and Seifert, K., 1962, pp. 273-289. (General.)
Becker, G., and Theden, G., 1963, pp. 1-258. (General.)
Boyer, P., 1959, pp. 41-44. (Tropics.)
Brian, M. V., 1965, pp. 6, 13-15, 19, 34, 43, 44, 47, 48, 58, 65, 70, 72, 76, 78, 83, 101, 105, 108-109. (General.)
Casida, J. E., 1964, pp. 1011-1017.
Chiaromonte, A., 1964, pp. 114-116.
Chopard, L., 1961, pp. 21-31. (General.)
Cleveland, L. R., 1960, pp. 110-112. (General.)
1960a, pp. 149-162.
Colwill, D. J., 1964, pp. 393-487.
Commonwealth Bur. Soil Science, 1960, pp. 352, 3. (Tropics.)
1964, 797, pp. 1-8.
Coupin, H., 1905, pp. 8-10.
Davies, R. G., 1962, p. 152. (General.)
Deligne, J., and Pasteels, J. M., 1963, p. 694. (General.)
1963a, pp. 462-472.
Dewilde, J., 1964, p. 12, *In* Rockstein 1964. (General.)
Emerson, A. E., 1961, pp. 115-131.
1962, pp. 17-30.
1962a, pp. 247-254.
1965, pp. 1-46.
Ericson, R. O., 1961, pp. 1-59. (General.)
Esenther, G. R., and Coppel, H. C., 1964, pp. 34, 36, 38, 42, 44, 46. (General.)
Farb, P., and The Editors of Life, 1962, pp. 82-86. (General.)
Fechino, A., 1961, pp. 67-75.
Fechner, J., 1962, pp. 111-115. (General.)
Fox, R. M., and Fox, J. W., 1964, pp. 5, 19, 20, 338, 350-354, 357. (General.)
Frings, H., and Frings, M., 1964, pp. 1-211.
Gabe, M., and Noirot, C., 1961, pp. 376-382. (General.)
1961a, pp. 411-430. (General.)
Gagliardi, P., 1963, pp. 350-356. (General.)
Ghilarov, M. S., 1961, pp. 393-397. (Tropics.)
1962, p. 129. (General.)
Gösswald, K., 1961, pp. 146-151. (General.)
Grassé, P. P., and Noirot, C., 1959, pp. 35-40. (Tropics.)
Griffin, F., 1961, pp. 1524-1526. (General.)
Grimstone, A. V., and Cleveland, L. R., 1965, pp. 387-400.
Hagley, E. A. C., 1964, pp. 905-906.
Haldar, D. P., and Chakravarty, M. M., 1964, pp. 377-381.
Harris, W. V., 1961, pp. 1-187. (General, tropics.)
1961a, pp. 228-232. (General.)
1962a, pp. 1-5. (General, tropics.)
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1962c, pp. 179-181. (Tropic, humid.)
1963b, pp. 192-201. (Tropics, world.)
1965, pp. 33-43. (World.)
1966, pp. 11-17.
Harris, W. V., and Sands, W. A., 1965, pp. 113-131. (World.)
Haskell, P. T., 1961, pp. 29, 59, 153. (General.)
Herfs, A., 1954, pp. 1-37. (Tropical countries.)
1964, pp. 92-100. (Tropical countries.)
Honigberg, B. M., 1963, pp. 20-63. (General.)
Howse, P. E., 1962, pp. 457-459. (General.)
1963, pp. 258-267. (General.)
1963a, pp. 256-268. (General.)
1964, pp. 90-97. (General.)
1964a, pp. 409-424. (General.)
1964b, pp. 284-300. (General.)
1965, pp. 314-315. (General.)
1965a, pp. 137-146. (General.)
1965b, pp. 335-345. (General.)

Hrdý, I. (Ed.), 1960, pp. 1-406. (General.)
Jakubski, A. W., 1965, pp. 1-187.
Jeannel, R. G., 1960, pp. 92, 93, 212-226, 274. (General.)
Jucci, C., 1957, pp. 109-129. (General.)
1960, pp. 105-127. (General.)
1960a, pp. 1-24. (General.)
1963, pp. 73-97. (General.)
Kalshoven, L. G. E., 1963b, pp. 289-294. (World.)
Kenaga, E. E., 1963, pp. 67-103. (General.)
Kendeigh, S. C., 1961, pp. 109, 164, 174-177, 251, 311-312, 338-339, 344, 347, 349. (General.)
Kevan, D. K. McE., 1962, pp. 2, 10, 18, 35, 52-55, 76, 89, 90, 92, 98, 99, 100, 133, 135, 140, 141, 177-179, 184, 189 et seq. (General, mostly tropics.)
Klots, A. B., and Klots, E. B., 1959, pp. 23-30. (World.)
Krishna, K., 1961, pp. 303-408. (World.)
1962a, pp. 1-25. (World.)
1963a, pp. 202-209. (World.)
1965a, pp. 39-40.
Krishna, K., and Emerson, A. E., 1962, pp. 1-65. (World.)
Krutch, J. W., 1963, pp. 22-25. (General.)
Kurir, A., 1963, pp. 67-70. (General.)
Lanham, U., 1964, pp. 35, 145, 154-158. (General.)
Larsson, Sv. G., 1962, pp. 323-326.
1965, pp. 135-142.
Lavette, A., 1960, pp. 4202-4204. (General.)
1964, pp. 1106-1108. (General.)
1964a, pp. 2211-2213. (General.)
Lewallen, L. L., 1962, pp. 1-29.
Lindauer, M., 1965, pp. 123-186.
Lüscher, M., 1960, pp. 579-582. (General.)
1962a, p. 615. (General.)
1963b, pp. 189-192.
McKittrick, F. A., 1963, p. 3045. (General.)
1964, pp. 1-197. (General.)
1965, pp. 18-22. (General.)
Marks, E. P., and Lawson, F. A., 1962, pp. 129-171. (General.)
Martynova, O. M., 1962. *In* Rondendorf 1962, pp. 112-113.
Metcalf, R. L. (Ed.) 1965, pp. 1-6289. (General.)
Miller, E. M., 1964, pp. 1-36.
Misra, J. N., 1962, p. 153.
Nelson, J. A., 1966, p. 50. (British Commonwealth.)
Fudalewicz-Niemczyk, W., 1962, pp. 137-155.
1965a, pp. 309-320. (General.)
Noirot, C., (1960) 1962, pp. 583-585. (General.)
Noirot, C., and Noirot-Timothée, C., 1965, pp. 265-272. (General.)
Noirot-Timothée, C., and Noirot, C., 1965, pp. 185-208.
Pemberton, C. E., 1964, p. 197. (Philippines, Queensland, Java, Formosa.)
Pickens, A. L., 1962, p. 101.
Plateaux-Quénu, C., 1961, pp. 178-185.
Puckett, P. P., 1965, pp. 84-85.
Richard, G., 1963, pp. 157-174. (General.)
Riley, N. D., 1962, pp. 916-917. (General.)
Rondendorf, B. B. (Ed.), 1962, p. 560.
Roonwal, M. L., 1962, pp. 9-16.
1962a, pp. 31-50.
1964, pp. 69-75. (General.)
Roth, L. M., and Willis, E. R., 1960, pp. 57, 69, 102, 310-311, 316, 317, 320. (General.)
Russo, G., 1963, pp. 210-217. (General.)
1963a, pp. 217-222. (General.)
Satir, P., and Stuart, A. M., 1965, pp. 277-283.
1965a, p. 494.
Schneiderman, H. A., and Gilbert, L. I., 1964, pp. 325-333. (General.)
Seifert, K., and Becker, G., 1965, pp. 105-111. (General.)
Sen-Sarma, P. K., 1964, pp. 300-314. (General.)
Silvestri, F., 1959, pp. 1-784. (General.)
Simon, H., 1962, pp. 7-119.
Smith, M. V., 1963, pp. 7-11.
Smith, R. F., 1965, pp. 235-258.
Snodgrass, R. E., 1961, pp. 425-445. (General.)
Snyder, T. E., 1961, pp. 1-137. (World.)
1962, pp. 48, 50. (General.)
1962a, p. 50. (General.)
1965, pp. 497-506. (General.)
Springhetti, A., and Gelmetti, L., 1960, pp. 377-382. (General.)
Springhetti, A., and Oddone, P., 1962, pp. 1-9. (General.)
1963, pp. 143-152. (General.)
1963a, pp. 311-334. (General.)
1964, pp. 146-156. (General.)
Stuart, A. M., 1963, pp. 69-84. (General.)
1963a, pp. 85-96. (General.)
1964, pp. 43-52. (General.)
Sudd, J., 1965, pp. 489-496. (General.)
Swan, L. A., 1964, pp. 4, 97, 240. (General.)
Tamblyn, N., 1962, pp. 1-4. (Tropics.)
Thomas, A. S., 1962, pp. 103-108. (General, tropics.)
Tomov, A., 1962, pp. 67-70. (General.)
Unesco, 1962, pp. 1-254. (Tropics, humid.)

URQUHART, F. A., 1965, pp. 69-72. (General.)
VERRON, H., and BARBIER, M., 1962, pp. 4089-4091.
WEIDNER, H., 1962a, pp. 1074-1087. (World.)
WEISS, H. B., and CARRUTHERS, R. H., 1937, pp. 1-63. (General.)
WELCH, H. E., 1965, pp. 275-302. (General.)
WENDT, H., 1965, pp. 185-192. (General.)
WHEATLEY, G. A., and HARDMAN, J. A., 1960, pp. 423-427.
WIGGLESWORTH, V. B., 1964, pp. 71, 86, 87, 100, 117, 120, 135, 156, 239-240, 244-246, 247, 309, 310. (General.)
WILSON, E. O., 1965, pp. 1064-1071. (General.)
WYNIGER, R., 1962, p. 12, 457-463. (Warm climates.)
ZIMSEN, E., 1964, pp. 612-613.
ZUBERI, H. A., 1962, pp. 393-395. (General.) 1963, pp. 147-208. (General.)

LIST OF AUTHORS AND TITLES

ALBIN, R. J.

1964. Immunological response between protozoa (Flagella) symbiotic to a roach (Orthoptera) and a termite (Isoptera), rabbit. Journ. Protozoology, vol. 11 (Supp. 1, pp. 16-17).

1965. Immunological response between protozoa symbiotic to a roach [*Cryptocercus punctulatus*] and a termite [*Zootermopsis nevadensis.*] .Experimentia, vol. 21, No. 8, pp. 441-442. Aug. 15.

ABUSHAMA, F. T.

1964. Electrophysiological investigation on the antennal olfactory receptors of the moist-wood termite, *Zootermopsis angusticollis* (Emerson.) The Entomologist, vol. 97, No. 1214, pp. 148-150, 3 figs. July.

1964a. The olfactory receptors on the antenna of the dampwood termite *Zootermopsis angusticollis* (Hagen.) Ent. Monthly Mag., vol. 100, Nos. 1202-1203, pp. 145-157, illustr. July/August.

AHMAD, M.

1962. Termite fauna of West Pakistan. Proc. Intern. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960. (UNESCO), Sect. 1, pp. 67-68.

1963. On the phylogenetic position of *Indotermes,* with description of a new species. Ann. and Mag. Nat. Hist., ser. 13, vol 6, pp. 395-399, 2 figs., 2 tables. July.

1965. Termites (Isoptera) of Thailand. Bull. Amer. Mus. Nat. Hist., vol. 131 (art. 1), pp. 1-114, 114 figs., 49 tables. Dec. 16.

ALAM, S. M.

1962. Some suggestions on the morphology of termites. Proc. Intern. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sec. 1, pp. 63-65.

ALIBERT, J.

1963. Échanges trophallactiques chez un termite supérieur. Contamination par le phosphore radio-actif de la population d'un nid de *Cubitermes fungifaber.* Bull. Union Internat. Étude Insectes Sociaux, vol. 10, No. 1, pp. 1-12, 2 figs., 1 table. Mars. Paris.

1964. [Evolution in time of fungi mounds constructed by termites.] (In French.) C. R. Acad. Sci., Paris, vol. 258, No. 21, pp. 5260-5263. May 25.

ALLEN, T. C., ESENTHER, G. R., and LICHTENSTEIN, E. P.

1954. Toxicity of dieldrin-concrete mixtures to termites. Journ. Econ. Ent., vol. 57, No. 1, pp. 26-29, 4 tables. Feb.

ALLEN, T. C., ESENTHER, G. R., and SHENEFELT, R. D.

1961. Concrete-insecticide mixtures toxic to termites. Scientific notes: Journ. Econ. Ent. vol. 54, No. 5, pp. 1055-1056. Oct.

ALLEN, T. C., SMYTHE, R. V., and COPPEL, H. C.

1964. Response to twenty-one termite species to aqueous extracts of wood invaded by the fungus *Lenzites trabea.* Pers. exfr. Scientific notes: Journ. Econ. Ent., vol. 57, No. 6, pp. 1009-1011, 1 table. Dec.

AMANTE, E.

1962. [Field experiments for *Cornitermes cumulans* (Kollar, 1832) termite control (Isoptera; Termitidae).] (In Portuguese.) Arq. Inst. Biol. [São Paulo], vol. 29, pp. 133-138.

ANNANDALE, N.

1910. Cockroaches as predatory insects. Rec. Indian Mus. 5 pts., vol. 3, pp. 201-202.

ANONYMOUS.

1937. Roaches combat termites. Soap and San. Chem., vol. 13, No. 6, p. 123.

1960. Termite control. Planters Bull., Rubber Res. Inst. Malaya, vol. 50, p. 109.

1960a. 12th Ann. Rep. Commonwealth Sci. and Indus. Res. Org. Australia 1959-1960. Timber preservation by dip diffusion, pp. 37-38.

1960b. The natural durability of local timbers. Tanganyika Forest Dept. Util. Div. Tech. Note 14. rev., pp. 1-6. Sept.

1960c. Resistance of some West African timbers to subterranean termites. W. Afric. Buildg. Res. Inst. Note 1. Accra.

1961. Commissione interministeriale per la lotta antitermitica. Elenco delle publicazione del "Centro di studi per lotta antitermitica" (1952-1960). Instituto di Patologia del Libro. Roma, pp. 1-9.

1961a. Down drilling, low pressure favored for soil treating. Pest Control, vol. 29, No. 9, pp. 46, 48. Sept.

1961b. Time and termites march on. Wood Preserving News, vol. 39, No. 9, p. 20. Sept.

1961c. Unsuitable termite warranties questioned at NPCA convention. Pest Control, vol. 29, No. 12, p. 40. Dec.

1961d. Where to buy pressure preserved wood products. Wood Preserving News, vol. 39, No. 12, pp. 5-7, 10-11, 14-15, 18-19, 20-21. Dec.

1961e. 13th Ann. Rep. Commonwealth Sci. and Indus. Res. Org. Australia 1960-1961. Protection of plastics from termites, p. 35.

1962. VA demand for professional termite inspections has TOs asking questions. Pest Control, vol. 30, No. 1, pp. 24, 26. Jan.

1962a. What to do when breathing stops. Loc. cit., p. 43, 2 figs. Jan.

1962b. In every major building area in the country, termite control is fast becoming a necessity. House and Home, vol. 21, No. 2, pp. 142-147, 8 figs., 16 diagrams, 1 map. Feb. Publish. by Time Inc., New York.

1962c. Termites "pest of the year" at Purdue PCO conference. Pest Control, vol. 30, No. 3, pp. 68-74, photos. some speakers. March.

1962d. Historical first fumigation great success. P.C.O. News, vol. 22, No. 3, p. 1, 1 fig. March.

1962e. Seminar on Vikane. Loc. cit., vol. 22, No. 3, p. 4. March.

1962f. Pest control equipment directory 1962—termites Pest Control, vol. 30, No. 5, pp. 64-70. May.

1962g. Structural Pest. Quarterly infestation report by county (California). P.C.O. News, vol. 22, No. 5, p. 6. May.

1962h. Pretreating system gives builders flexibility in meeting code standards. Bruce Magazine, vol. 42, No. 1, pp. 16-17. Summer.

1962i. Pressure-treat house understructure to avoid termite damage, expert says. Wood Preserving News, vol. 40, No. 6, p. 14. June.

1962j. Obituary. Roark, Ruric C. (1887-1962). Pest Control, vol. 30, No. 7, pp. 53-54, 1 fig., photo. July.

1962k. Fumigation specifications. P.C.O. News, vol. 22, No. 6, pp. 10, 23. June.

1962l. Easy termiticide soil residue test . . . forecast at annual tristate P.C.O. convention last month. Pest Control, vol. 30, No. 9, p. 24, photo. Sept.

1962m. Structural Pest. Quarterly infestation report, (California) by county. P.C.O. News, vol. 22, No. 9, pp. 22-23. Sept.

1962n. 14th Ann. Rep. Commonwealth Sci. and Indus. Res. Org. Australia 1961-1962. Div. of Ent. Published papers, p. 81.

1962o. Drilling through cement floor to treat concrete-slab construction is not answer. Pest Control, vol. 30, No. 10, pp. 80, 82, 4 figs. Oct.

1962p. Wisconsin city outlaws termites; enforcement proves difficult. Pest Control, vol. 30, No. 11, pp. 36, 38. Nov.

1962q. Old phantom of VA inspections still haunts NPCA termite group. Loc. cit., vol. 30, No. 12, pp. 40, 42. Dec.

1962r. Commercial warranties goal. Loc. cit., vol. 30, No. 12, pp. 42, 44. Dec.

1962s. Alphabetical list of AWPI member treating companies and their sales offices addresses. 1963 National Guide, where you can buy pressure preserved wood products. Wood Preserving News, vol. 40, No. 12, pp. 10-23. Dec.

1963. Mites enjoy termites in Hawaii. Pest Control, vol. 31, No. 1. p. 50. Jan.

1963a. Florida city forbids termites. Loc. cit., vol. 31, No. 1, p. 50. Jan.

1963b. To warrant or not to warrant. That's the TO's question. Loc. city., vol. 31, No. 2, pp. 9-10, 12, 16. Feb.

1963c. Termite inspection charges, reports debated at Purdue P.C.O. conference. Loc. cit., vol. 31, No. 3, pp. 72, 74, 76, 78. March.

1963d. Second Structural Pest Quarterly infestation report by county (California) P.C.O. News, vol. 23, No. 3, pp. 16-17. March.

1963e. Note, Deaths due to pesticides last year. Nat. Agric. Chemicals Assocn. News, vol. 21, No. 4, p. 2. April. Wash., D.C.

1963f. Pest control equipment directory 1963—termite control, pp. 74-80; fumigation, pp. 80-82; safety pp. 87-89.

Pest Control, vol. 31, No. 5, pp. 44-89. May.

1963g. Retaining-wall "flower boxes" are termite havens, operator's headache. Loc. cit., vol. 31, No. 5, pp. 92, 94-96, 7 figs. May.

1963h. Faulty house drains may cause post-treatment trouble for TOs. Loc. cit., vol. 31, No. 6, pp. 49-50, 52, 54, 64, 7 figs. June.

1963i. 1962 Yearly Structural Pest infestation report, by county (California) P.C.O. News, vol. 23, No. 6, pp. 6-7. June.

1963j. First Structural Pest Quarterly infestation report by county (California.) Loc. cit., vol. 23, No. 6, pp. 10-11. June.

1963k. Wood in concrete may be disguised, so be alert for construction errors. Pest Control, vol. 31, No. 8, pp. 50, 52, 54-55. Aug.

1963l. Second Structural Pest Quarterly infestation report by county (California.) P.C.O. News, vol. 23, No. 8, pp. 22-23. Aug.

1963m. Crawl spaces hold many hazards; TOs should proceed with caution. Pest Control, vol. 31, No. 9, pp. 40, 42-43. Sept.

1963n. Ventilation and decay control a natural for termitemen. Loc. cit., vol. 31, No. 10, pp. 68, 70, 72 and 74. Oct.

1963o. TO shows value of special skills as novice defaults on termite job. Loc. cit., vol. 31, No. 11, pp. 42, 46. Nov.

1963p. Third Structural Pest Quarterly infestation report by county (California.) P.C.O. News, vol. 23, No. 11, pp. 18-19. Nov.

1963q. Chemicals in subterranean termite control. Nat. Pest Control Assoc., Elizabeth, N.J. 1951, revised pp. 35-44k 1963 Dec. 31.

1964. Historic interindustry safety conference seeks proper perspective for antipesticide publicity. Pest Control, vol. 32, No. 1, pp. 22, 24, 26, 28, 30, 32-34, photos. participants. Jan.

1964a. Infestations. Loc. cit., vol. 32, No. 1, p. 58. Jan. From Uganda Argus, Sept. 19, 1963.

1964b. And now—Wood Preserving News, vol. 42, No. 1, p. 3. Jan.

1964c. 1964 National Guide—Where you can buy pressure preserved wood products. Loc. cit., vol. 42, No. 1, pp. 12-23. Jan.

1964d. The talk of the town. Termites. The New Yorker Jan. 18, pp. 23-24.

1964e. What the typical termite truck includes (equipment inventory.) Pest Control, vol. 32, No. 2, pp. 13-14, 16, 18, 1 fig. Feb.

1964f. Some tips for more aggressive selling of termite pretreat contracts. Loc. cit., vol. 32, No. 2, pp. 48, 50, 54. Feb.

1964g. How effective are termite shields? Wood Preserving News, vol. 42, No. 2, p. 3. Feb.

1964h. Fourth Structural Pest Quarterly infestation report by county (California) P.C.O. News, vol. 24, No. 2, pp. 12-13. Feb.

1964i. Directory of pesticides. Pest Control, vol. 32, No. 3, pp. 59-60, 62, 64, 66, 68, 70, 72, 75-76, 78. Suppliers pp. 78, 80, 82. Mar.

1964j. Infestation report. Loc. cit., vol. 32, No. 3, p. 94. Mar.

1964k. Preferential fire insurance rates for FRT wood in 49 states. Wood Preserving News, vol. 42, No. 4, p. 3. April.

1964l. The complete text of A. B. No. 93. P.C.O. News, vol. 24, No. 4, pp. 6-7. Apr.

1964m. Equipment directory pest control 1964. Pest Control, vol. 32, No. 5, pp. 36, 38, 40, 42, 44, 46, 48, 50-51, 54-55, 58, 60-62, 64, 66-68, 70, 72, 74, 76-80. May.

1964n. The terrible termites. The American Home, vol. 67, No. 4, pp. 108-109. May.

1964o. First Structural Pest quarterly infestation report by county (California) P.C.O. News, vol. 24, No. 5, pp. 22-23. May.

1964p. A report of the inspection and service record of wood preservatives. Mississippi State Highway Dept., Pt. I Test Garden, Pt. II Guard Rail Sections, pp. 1-51. Jackson, Miss.

1964q. VA issues new termite inspection requirements. Pest Control, vol. 32, No. 6, p. 70. June.

1964r. Survey shows termite shields are ineffective. Wood Preserving News, vol. 42, No. 6, pp. 11, 14-15, 6 figs. June.

1964s. How to use FHA-developed soil test kit to check termiticide residues. Pest Control, vol. 32, No. 8, pp. 52, 54, 56. August.

1964t. Second Structural Pest quarterly infestation report by county (California)

P.C.O. News, vol. 24, No. 8, pp. 16-17. Aug.

1964u. Statistical report of complaints filed, prepared by Structural Pest Control Board (California), loc. cit., p. 11.

1964v. Termites nose out "The Beatles" as the top school menace. Wood Preserving News, vol. 42, No. 9, p. 3. Sept.

1964w. Yearly Structural Pest quarterly infestation report by county (California) 1963. P.C.O. News, vol. 24, No. 11, pp. 24-25. Nov.

1964x. Delegates get "big picture" of worldwide wood protection at NPCA meet Oct. 18-23. Pest Control, vol. 32, No. 12, pp. 28, 30, 32. Dec.

1964y. Third Structural Pest quarterly infestation report by county (California) 1964. P.C.O. News, vol. 24, No. 12, pp. 16-17. Dec.

1964z. Termite damage can be avoided. Loc. cit., vol. 42, No. 12, p. 3, Dec.

1965. 1965 National buyers guide for pressure preserved wood products. Wood Preserving News, vol. 43, No. 3, pp. 5, 7, 11, 15, 17, 19, 21, 22-23. Jan.

1965a. What's ahead in termite control. Pest Control, vol. 33, No. 2, pp. 18-19, 22, 25, 50. Feb.

1965b. Fourth Structural Pest quarterly infestation report by county (California) 1964. P.C.O. News, vol. 25, No. 2, pp. 18-19. Feb.

1965c. Purdue's '65 conference prepares P.C.O.s to meet increasing demand for technical competence. Pest Control, vol. 33, No. 3, pp. 42, 44, 46, 48, 50, 52, 54, 99-100, 102, figs. speakers. Mar.

1965d. Directory of pesticides. Suppliers. Loc. cit. vol. 33, No. 3, pp. 60-62, 65, 68, 70, 72-76, 78, 80-82, 84. Suppliers, pp. 85-87. Mar.

1965e. Pest Control's 1965 equipment directory, index to product listings. Loc. cit., vol. 33, No. 5, pp. 32, 36, 38, 40, 42, 43, 44, 46, 48, 51, 52, 54, 56, 58, 60, 62, 64, 65. Listing suppliers and addresses pp. 66, 68, 70, 72. May.

1965f. First Structural Pest quarterly infestation report by county (California) 1965. P.C.O. News, vol. 25, No. 6, pp. 18-19. June.

1965g. Approved reference procedures for subterranean termite control. National Pest Control, Assoc., pp. 1-250. (Revised June 1965, pp. 60A and 60B.)

1965h. Military entomology operational handbook. Army TM 5.632, Navdocks MO-310, Air Force AFM 85-1. June. Termites, pp. 8-1 to 8-19, illustr.

1965i. Second Structural Pest quarterly infestation report by county (California) 1965. P.C.O. News, vol. 25, No. 8, pp. 18-19. August.

1965j. Infestation report. Pest Control, vol. 33, No. 9, p. 61. September.

1966. Masking agents and perfumes. Pest Control, vol. 34, No. 1, pp. 13-15, 1 fig. Jan.

1966a. Termites prefer new houses. Loc. cit., vol. 34, No. 2, p. 46. Feb.

1966b. Buyers guide for pressure preserved wood products, 1966. Wood Preserving News, vol. 44, No. 2, pp. 16-39. Feb.

1966c. Pest Control's 1966 directory pesticides. Pest Control, vol. 34, No. 3, pp. 53-74. March.

1966d. Notes on National Academy of Sciences Public Symposium on Scientific Aspects of Pest Control, Washington, D.C., Feb. 1-3. Loc. cit., vol. 34, No. 3, pp. 86-92, 2 figs. March.

1966e. Third Structural Pest quarterly infestation report by county (California) 1965. P.C.O. News, vol. 26, No. 1, p. 12. Jan.

1966f. Fourth Structural Pest quarterly infestation report by county (California) 1965. Loc. cit., vol. 26, No. 2, p. 64. Feb.

1966g. New standards released this month by FHA for use of termite soil poisons near independent water systems. Pest Control, vol. 34, No. 4, pp. 48, 50, 52. April.

1966h. Supplement—1966 Buyers guide for pressure preserved wood products. Wood Preserving News, vol. 44, No. 4, pp. 15-17. April.

1966i. Pest Control's 1966 Equipment directory. Pest Control, vol. 34, No. 5, pp. 20, 22, 24, 28, 30, 32, 34, 36, 38, 40, 42, 45-46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66. May.

Araujo, R. L.

1961. New genus and species of Brazilian termite (Isoptera, Termitidae, Termitinae). Rev. Bras. de Biol., vol. 21, No. 1, pp. 105-111, 2 figs., 2 tables. June.

Ardley, J. H., Clifford, L. T., and Gay, F. J.

1965. Termite damage to plantation-grown hoop pine in New Guinea. Proc. XII

Internat. Congr. Entomology London 1964, Sect. 10: Forest Entomology, pp. 680-681.

Armed Forces Pest Control Board.
1963. Current pest control recommendations. Technical information Memorandum Nr. 6, pp. 1-14. (Termites pp. 6-7.) Dec.

Arora, G. L.
1962. Biological observations on some termites from Hoshiarpur, Punjab. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 3, pp. 111-113, pls. 21-26.

Attfield, J. G.
1961. Dieldrin in wood preservation. Pest Technology, vol. 3, No. 5, pp. 108-110, 112-113. Feb. London.
1962. Termite control. Wood (London), vol. 27, No. 6, pp. 252-253. June.

Ausat, A., Cheema, P. S., Koshi, T., Perti, S. L., and Ranganathan, S. K.
1962. Laboratory culturing of termites. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO) Sect. 3, pp. 121-125, 6 tables.
1962a. Natural resistance of different species of timbers to termite attack. Loc. cit., Sect. 6, pp. 199-202, 2 tables.

Baccetti, B.
1963. [Researches on ultrastructure of the intestine in insects 11—The mesenteron and the colon in the sterile caste of termites.] (In Italian.) Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.-Pavia, 9-14 Sett. 1961, vol. XI, pp. 230-255, 4 figs., 9 pls. Dec. 14.

Badonnel, A.
1955. Psocoptères del'Angola. Diamang Publiçacões Culturais No. 26, pp. 11-267, 625 figs. (Termitophiles, pp. 40-41, figs. 46-53, pp. 44-45, figs. 63-69.) Lisbon.

Bakshi, B. K.
1962. Fungi in relation to termites. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 3, pp. 117-119.

Ballantyne, W. J.
1964. Chicago TO finds drywood termites demand specialized control methods. Pest Control, vol. 32, No. 4, pp. 50, 52, 54. April.

Banerjee, B.
1957. Haploid chromosome numbers in the testis of the termite king *Odontotermes redemanni* (Wasmann.) Cur. Sci., vol. 26, No. 9, pp. 288-289. Sept.
1961. Chromosome morphology during the spermatogenesis of *Odontotermes redemanni* (Wasmann.) Caryologia, vol. 14, No. 1, pp. 155-158. Jan./Apr.
1964. Cytochemical localization of alkaline phosphatase during the early embryogenesis of *Odontotermes redemanni* (Wasmann.) Die Naturwissenschaften, vol. 51, No. 18, p. 445.
1965. Structure of the male reproductive organs of *Odontotermes redemanni* (Wasmann.) Cur. Sci., vol. 34, No. 14, pp. 435-436, illustr. July 20.

Banks, F. A.
1946. Species distinction in *Reticulitermes* (Isoptera:Rhinotermitidae.) A dissertation submitted to the graduate faculty in candidacy for the degree of master of science. Dept. of Zoology. Univ. of Chicago, Chicago, Ill., pp. i-iii, 1-28, 1 map, 1 plate, 2 tables, 5 diagrams. Aug. Unpublished.

Bano, Z., Ahmed, R., and Shrivastava, H. C.
1964. Amino acids of edible mushrooms *Lepiota* sp. and *Termitomyces* sp. Indian Journ. Chem., vol. 2, No. 9, pp. 380-381.

Bashir, N. A.
1963. Termites of the Punjab. Journ. Colo.-Wyo. Acad. Sci., vol. 5, No. 4, pp. 48-49 Abstract. Dec.

Beal, R. H., and Kais, A. G.
1962. Apparent infection of subterranean termites by *Aspergillus flavus* Link. Journ. Insect Path., vol. 4, No. 4, pp. 488-489. Dec.

Beal, R. H., and Smith, V. K.
1964. Progress report on granular formulations of insecticides for controlling termites. Journ. Econ. Entomol., vol. 57, No. 5, p. 771, Oct.

Becker, G.
1961. [On the examination and estimation of the natural resistance of wood to termites.] (In German.) Holz als Roh- und Werkstoff, vol. 19 (1961), pp. 278-290, 7 figs., 9 tables.
1961a. [Observations and experiments upon the beginning of colony development of *Nasutitermes ephratae* Holmgren. (Isoptera)] (In German.) Zeitschr. Angew. Ent., vol. 49, No. 1, pp. 78-94, 11 figs. Dec.

1961b. 25 Jahre Holzschutzforschung und-prüfung in Berlin-Dahlem. Holz-Zentralblatt, Stuttgart, No. 118, Oct. 2. pp. 1-7, 4 figs.
1962. [Observations and experiments upon the beginning of colony development of *Nasutitermes ephratae* Holmgren.] (In German.) Zeitschr. Angew. Ent., vol. 49, No. 2, p. 232. Feb.
1962a. [General remarks on laboratory testing of the durability of materials and of the efficacy of preservatives against termites.] (In German) Materialprüf, vol. 4, No. 6, pp. 215-222, 6 figs. June 20.
1962b. Schäden an Kunststoffen durch Tiere. Zeitschr. Angew. Zool., vol. 49, Heft 1, pp. 95-109, 11 figs.
1962c. Fortschritte in der Kenntnis holzzerstörender Insekten und auf dem Gebiet des Holzschutzes gegen sie. Zeitschr. Angew. Ent., vol. 50, No. 1, pp. 17-40.
1962d. Beiträge zur Kenntnis der geographischen Verbreitung und wirtschafflichen Bedeutung von Termiten in Indien. Zeitschr. Angew. Ent., vol. 50, Heft 2, pp. 143-165, 15 figs., 3 tables. Aug.
1962e. Beobachtungen über einige Termiten-arten in Indien. Loc. cit., vol. 50, No. 4, pp. 359-379, 21 figs. Nov.
1962f. [Laboratory tests on wood and wood preservatives with the South Asiatic termite *Heterotermes indicola* Wasmann.] (In German) Holz als Roh-u-Werkst., vol. 20, No. 12, pp. 476-486, 16 figs., 2 tables. Dec.
1963. Wood preservation in tropical countries. Germany, Heft Nr. 35, reprint 4 pp., 8 figs. Oct.
1963a. Ruheeinstellung nach der Himmelsrichtung, eine Magnetfeldorientierung bei Termiten. Die Naturwissenschaften, Jahrg. 50, No. 12, pp. 455-456.
1963b. [Laboratory testing of the natural durability of wood species against termites.] (In German.) Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.-Pavia, 9-14 Sett. 1961, vol. XI, pp. 132-145, 4 figs., 4 tables. Dec. 14.
1963c. [The dependence on temperature of the developmental processes in young colonies of a *Nasutitermes* species.] (In German.) Loc. cit., vol. XI, pp. 286-295, 3 figs. Dec. 14.
1964. [Reaction of insects to magnetic fields, electric fields and atmospherics.] (In German.) Zeitschr. Angew. Ent., vol. 54, Heft 1/2, pp. 75-88, 8 figs.
1964a. [Attractant effect on termites of some compounds formed in wood attacked by Basidiomycetes.] (In German.) Holzforschung, vol. 18, Heft 6, pp. 168-172, 3 tables. Dec.
1965. Feuchtigkeitseinfluss auf Nahrungswahl und-Verbrauch einiger Termiten-Arten. Bull. Union Internat. Étude Insectes Sociaux, vol. 12, No. 2, pp. 151-184, 15 figs. June.
1965a. Versuche über den Einfluss von Braunfäulpilzen auf Wahl und Ausnutzung der Holznahrung durch Termiten. Material und Organismen, Bd. 1, Heft 2, pp. 95-156, 19 figs., 4 tables.
1965b. Über Haltung von Termiten im Laboratorium. Zeitschr.. Angew. Zool., 52 Jahrgang, Heft 4, pp. 385-398, 7 figs.
1965c. [Tests on the effectiveness of synthetic contact insecticides against four termite species.] (In German.) Holz als Roh-und Werkstoff, Bd. 23, Heft 12, pp. 469-478, 12 tables. Dec.

Becker, G., and Burmester, A.
1962. [Change of wood properties caused by γ-radiation.] (In German.) Materialprüfung, vol. 4, No. 11, pp. 416-426, 12 figs., 11 tables.

Becker, G., and Kerner-Gang, W.
1964. Schädigung und Förderung von Termiten durch Schimmelpilze. Zeitschr. Angew. Ent. vol. 53, Heft 4, pp. 429-448, 10 figs., 3 tables. April.

Becker, G., and Puchelt, D.
1961. Grundlagenversuche für Laboratoriumsprüfungen mit zwei *Reticulitermes*-Arten. Holzforsch. u. Holzverwert., Jahrg. 13, Heft. 6, pp. 110-116, 8 figs., 3 tables.

Becker, G., and Seifert, K.
1962. Ueber die chemische Zusammensetzung des Nest-und Galeriematerials von Termiten. Bull. Union Internat. Étude Insectes Sociaux, vol. 9, No. 3, pp. 273-289, 2 figs., 4 tables. Sept.

Becker, G., and Theden, G.
1963. [Annual report on wood protection 1956.] (In German.) Berlin, pp. 1-258.

Beebe, W.
1924. Galapagos, world's end, pp. 1-443. G. P. Putnam's Sons, New York, (Termites, p. 101.)

Beesley, J.
1961. What is the termite hazard? Counc. Sci. Industr. Res. Org. Australia Forest Prod. Newslett. 272, pp. 3-4, Mar.
Bei-Bienko, G. Ya.
1964. Order Isoptera *In* BEI-BIENKO, G. Ya. ed. [Detector (key) of the insects of the European part of S.S.S.R.] Pt. 1. Akad. Nauk S.S.S.R. Zoological Inst. Opredeliteli po Faune S.S.S.R. No. 84, pp. 174-176, illustr. (In Russian.)
Beier, M.
1964. [A new pseudoscorpion from termite mounds.] (In German.) Rev. Zool. et Bot. Africaines, vol. 60, Nos. 1/2, pp. 198-200. Mar. 28.
Bell, J. L.
1965. Today, drywood termites are mobile. Pest Control, vol. 33, No. 2, pp. 46, 52, 1 fig. Feb.
Benoit, P. L. G.
1964. [The discovery of anophthalmic Oonopidae in African termite nests. (Araneae.)] (In French). Rev. Zool. Bot. Africaines, vol. 70, Nos. 1/2, pp. 174-187. Sept. 30.
Bernard, C.
1962. Termite industry is not becoming a racket. P.C.O. News, vol. 22, No. 8, pp. 8, 10-11. Aug.
Bernard, J.
1964. Les termites et l'agriculture. Bul. École Nat. Super. d'Agric. de Tunis. No. 3, pp. 83-95.
Bernardini, P., and Palestra, A. M.
1956. [The tentorial glands in various castes and stages of *Calotermes flavicollis* (Calotermitidae—Isoptera)] (In Italian) Boll. Zool., vol. 23, No. 2, pp. 727-734.
Berzai, L. J.
1964. Dye in spray tank helps to trace termiticide placement, penetration. Pest Control, vol. 32, No. 9, p. 46. Sept.
Bess, H. A.
1963. Notes and exhibitions. Proc. Hawaiian Entomological Soc., vol. 18, No. 2 (1962), p. 204. July. (Termite queens.)
1964. Ibid. Loc. cit., vol. 18, No. 3 (1963), p. 351. June. (*Coptotermes formosanus.*)
1965. Second species of subterranean termite established in Hawaii, P.C.O. News, vol. 25, No. 10, Oct. Inserts: Hawaii Pest Control p. 1, 1 photo.
Beuerle, O. K.
1961. [Measures taken for termite control in Austria.] (In German.) Prakt. Schädlingsbekämpfer, vol. 13, No. 9, pp. 150, 152. Sept.
Beyer, E. M.
1965. Über neue und wenig bekannte termitophile Phoriden (Diptera) aus Südafrica. Journ. Ent. Soc. Southern Africa, vol. 27, No. 2, pp. 181-187, 4 figs. Feb. 28. Pretoria.
Bhatnagar, S. P.
1962. Insecticidal trials against termites infesting cotton plants under unirrigated (barani) conditions in Rajasthan. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, p. 223, 1 table.
Bindra, O. S.
1961. Termite damage in north western Madhya Pradesh, with results of experiments on their chemical control. Indian Journ. Ent., vol. 22, Pt. 4, pp. 277-282. Dec. 1960. New Delhi. Dec. 1961.
Blew, J. O., Jr.
1962. Comparison of wood preservation in stake tests. 1962 progress rep. Forest Serv., U.S. Dept. Agric. Rep. No. 1761, pp. 1-9, 43 tables. Mar.
1963. Idem. 1963 progress rep. Loc. cit., FPL-02, pp. 1-9, 43 tables, April.
1964. Idem. 1964 progress rep. Loc. cit., FPL-02, pp. 1-9, 43 tables, April.
Blew, J. O., and Kulp, J. W.
1962. Comparison of wood preservatives in Mississippi post study. 1962 progress rep. Forest Products Lab., Forest Serv., U.S. Dept. Agric. Rep. No. 1757 (rev.), pp. 1-15, 1 fig., 2 tables. Feb.
1963. Idem. 1963 progress rep. Loc. cit., FPL-01, pp. 1-15, 1 fig., 4 tables. Feb.
1964. Idem. 1964 progress rep. Loc. cit., FPL-01, pp. 1-15, 1 fig., 4 tables. Feb.
1965. Idem. 1965 progress rep. Loc. cit., FPL-01, pp. 1-15, 1 fig., 4 tables. Feb.
1965a. Comparison of wood preservatives in stake tests. 1965 progress rep. Forest Products Lab., Forest Serv., U.S. Dept. Agric. Res. Note FPL-02, pp. 1-9, 45 tables. May.
Bodot, P.
1961. [The destruction of the termitaria of *Bellicositermes natalensis* Hav. by an ant *Dorylus* (*Typhlopone*) *dentifrons* Wasmann.] (In French.) C. R. Acad. Sci. Paris, vol. 253, No. 25, pp. 3053-3054. Dec. 18.

1962. [The seasonal cycle of termites in the savannahs of southern Ivory Coast.] (In French.) Loc. cit., vol. 255, No. 4, pp. 789-790. July 23.

1964. Documents sur les jeunes nids de *Bellicositermes bellicosus*. Bull. Union Internat. Étude Insectes Sociaux, vol. XI, No. 3, pp. 283-291, 1 pl., 4 figs. Sept.

Bonaventura, G.

1961. [The Institute of Pathology of Books and termite control in Italy.] (In Italian.) Boll. 1st. Patol. Libro (Rome), vol. 20, Nos. 3-4, pp. 237-254, Illustr.

1963. [Idem.] (In Italian.) Symposia Genetica et Biologica Italica. Atti iv Congr. IV U.I.E.I.S.-Pavia, 9-14 Sett. 1961, vol. XI, pp. 9-19. Dec. 14.

Borror, D. J., and DeLong, D. M.

1964. An introduction to the study of insects. Holt, Rinehart and Winston, New York. v-819, illustr., revis. ed. (Termites, pp. 56, 62, 65, 118, 119-123, 489, 657, 665, 720-721, figs. 10-1 to 10-5, 13-13.)

Borgmeier, T.

1959. [Four new genera and several new species of termitophiles (Staphilinidae) from Costa Rica and Brazil (Coleoptera:Staphilinidae)] (In German). Studia Ent. (n.s.), vol. 2, Nos. 1/4, pp. 289-308. Sept.

Bouillon, A.

1958. Les termites du Katanga. Les Naturalistes Belges, vol. 39, No. 6, pp. 198-209, 3 figs. 1 map, 1 table. Sept.

1964. Ed. Études sur les termites africains: un colloque international Université Lovanium, Léopoldville, 11-16 Mai 1964 sous les auspices de l'UNESCO, 8 vol. Paris: Masson et Cie, pp. 414, 148 figs., 81 tabs.

Bouillon, A., Lekie, R., and Mathot, G.

1962. Études sur les termites Africains. 1. Distribution spatiale et essai sur l'origine et la dispersion des especes du genre *Apicotermes* (Termitinae.) Studia Universitatis "Lovanium" Faculte des Sciences Léopoldville, 15, pp. 1-35, 6 figs., 1 map, 10 graphs, 7 tables.

Bouillon, A., and Mathot, G.

1965. Quel est ce termite Africain? Zooleo, No. 1, Universite Leopoldville, pp. 1-115, 25 pls., 2 tables.

Boyer, P.

1958. [Effect of reworking by termites and of erosion on the pedogenetic development of the mounds of *Bellicositermes rex*.] (In French.) C. R., Acad. Sci., Paris, vol. 247, pp. 749-751.

1959. [The influence of termites on the conformation of certain soils in the intertropical zone.] (In French.) Rev. Géomorphol. Dyn., vol. 10, pp. 41-44.

Bready, J. K.

1963. Physiological investigations on the eastern subterranean termite *Reticulitermes flavipes* (Kollar.) Diss. Abs. Univ. Microfilms, Inc., Ann. Arbor, Mich., vol. 23, No. 8, Zoology, pp. 3039-3040. Feb.

Bready, J. K., and Friedman, S.

1963. Oxygen poisoning of the termite, *Reticulitermes flavipes* (Kollar), and protection by carbon dioxide. Journ. Insect Physiol., vol. 9, No. 3, pp. 337-347, 4 tables. June.

1963a. The nutritional requirements of termites in axenic culture. 1. Sterilization of eggs of *Reticulitermes flavipes* and the requirements of first instar nymphs. Ann. Ent. Soc. Amer., vol. 56, No. 5, pp. 703-706. Sept. 15.

1963b. Idem. 2. Studies on the effectiveness of antibiotics in the sterilization of workers of *Reticulitermes flavipes*. Loc. cit., pp. 706-708, 1 table.

Brian, M. V.

1965. Social insect populations. Academic Press. London, New York, pp. 1-135. (Termites, pp. 6, 13 to 15, 19, 34, 43, 44, 47, 48, 58, 65, 70, 72, 76, 78, 83, 101, 105, 108-109.)

Brook, T. S.

1965. Termiticide distribution in soil and termite biology subjects of Miss. U. research project. Pest Control, vol. 33, No. 8, pp. 42, 44. Aug.

Brown, K. W.

1961. An interim report on termite research. Uganda Forest Dept. Tech. Note 98, pp. 1-18. Nov.

Brownstein, P. N.

1962. What required VA inspection reports must contain. Pest Control, vol. 30, No. 2, pp. 9, 11-12, photo. author. Feb.

Bruce, E. L. Co., Inc.

1963. When you remodel provide termite control. House Beautiful Building Manual Fall Winter Number, vol. 46, p. 192. Reprint pp. 1-2, 12 figs. E. L. Bruce Terminix, Memphis, Tenn.

Brunck, F.

1962. Aperçu sur les principales attaques

parasitaires observées dans les plantations forestières d'Afrique tropicale. Nogent-sur-Marne, Cent. Tech. Forest. Trop. Note Tech., No. 5, pp. 1-65, illustr. (Isoptera, pp. 20-22.)

Buchli, H.

1961. Les relations entre la colonie maternelle et les jeunes imagos ailés de *Reticulitermes lucifugus*. Vie et Milieu, vol. 12, fasc. 4, pp. 628-632. 1961. Publ. Feb. 1962.

Butani, D. K.

1961. Insect pests of sugarcane in Bihar-Pt. 2. Indian Sugar, vol. 10, No. 12, pp. 765-768; 779-781, illustr. (Termites, pp. 767-768.)

Butler, G. D.

1961. Insects and other Arthropods from Laysan Island. Proc. Hawaiian Ent. Soc., vol. 17, No. 3, p. 381. Aug.

Cabral, J. DeS. M. N.

1959. Alguns elementos para o estudo da entomofauna do pinheiro bravo (*Pinus pinaster* Sol. Ex Ait.) no concelho de Amarante. Direcção Geral dos Serviços Florestaise Aquicolas. Publicações, vol. 26- Tomo 1 [e]11, pp. 28-29.

California P.C.O.s

1962. Proposed revision of rules and regulations. P.C.O. News, vol. 22, No. 2, pp. 3, 4, 12. Feb. Los Angeles, California.

California Structural Pest Control Board

1962. Governor's Report. P.C.O. News, vol. 22, No. 8, pp. 12-13. Aug.

1962a. Idem. Loc. cit., vol. 22, No. 9, pp. 12-13. Sept.

1963. Idem. Loc. cit., vol. 23, No. 1, pp. 12-13. Jan.

1963a. Idem. Loc. cit., vol. 23, No. 5, pp. 12-13. May.

1963b. Idem. Loc. cit., vol. 23, No. 9, pp. 12-13. Sept.

1964. Idem. Loc. cit., vol. 24, No. 1, pp. 12-13. Jan.

1964a. Idem. Loc. cit., vol. 24, No. 3, pp. 12-13. Mar.

1964b. Idem. Loc. cit., vol. 24, No. 6, pp. 16-17. June.

1964c. Idem. Loc. cit., vol. 24, No. 11, pp. 18-19. Nov.

1965. Idem. Loc. cit., vol. 25, No. 1, pp. 12-13. Jan.

1965a. Idem. Loc. cit., vol. 25, No. 3, pp. 12-13. March.

1965b. Idem. Loc. cit., vol. 25, No. 5, pp. 12-13. May.

1965c. Idem. Loc. cit., vol. 25, No. 9, pp. 12-13. Sept.

1965d. Informational letter. Loc. cit., vol. 25, No. 9, p. 10, Sept.

1965e. Governors report. Loc. cit., vol. 25, No. 11, pp. 20-21. Nov.

1966. Idem. Loc. cit., vol. 26, No. 2, p. 65. Dec.

Cals-Usciati, J., and Frescheville, J. De.

1963. [Perennation of a colony of termites [*Reticulitermes lucifugus*] in Paris.] (In French.) Cahiers des Nats (n.s.), vol. 19, No. 2, p. 54.

Cancienne, E. A.

1961. Guard your home against termite attack. Louisiana Univ. Agric. Ext. Publ. 1304, pp. 1-8, Folder. Nov.

Casida, J. E.

1964. Esterase inhibitors as pesticides. Science, vol. 146, No. 3647, pp. 1011-1017, 3 diagrams. Nov. 20.

Casimer, M.

1960. *Tegea atropicta* Stäl (Hemiptera: Reduviidae), an unusual predator. Proc. Linn. Soc. N.S.W., vol. 85, No. 2, pp. 230-232.

Castel-Branco, A. J. E.

1963. Entomofauna de S. Tomé (Insectos do cacaueiro.) Portugal Junta de Invest. do Ultramar. Estud. Ensaios e Doc. 107, 1963, pp. 17-94, illustr.

Chatterjee, P. N.

1961. Review. Contribution to the systematics of oriental termites, 407 pp., 46 figs. 65 pls. M. L. Roonwal and P. K. Sen-Sarma. Ent. Monogr. No. 1, Ind. Counc. Agric. Res., New Delhi 1960. Ind. Forester, vol. 67, No. 10, Oct. reprint p. 1.

1963. Residual soil poisoning effect of a mixture of benzene hexachloride (BHC) and dieldrin against subterranean termites. Sci. and Cult., vol. 29, No. 3, p. 148.

Chatterjee, P. N., and Sen-Sarma, P. K.

1962. Seasonal incidence of wood destroying subterranean termites. Indian Forester, vol. 88, No. 2, pp. 139-142. Feb.

1962a. *Odontotermes paralatigula* a new species of termite from Burma. (Isoptera: Termitidae: Macrotermitinae.) Journ. Bombay Nat. Hist. Soc., vol. 59, No. 3, pp. 822-826, 3 figs., 1 table. Dec. Pub. Mar. 25, 1963.

1963. Antitermite characteristics of insecticides 1- Results of field experiments using commercial sample of shell liquid of *Anacardium occidentale,* aldrin and dieldrin. Indian Forester,

vol. 89, No. 4, pp. 280-285, 3 figs., 2 tables. April.

CHATTERJEE, P. N., and THAKUR, M. L.

1963. Revision of the termite genus *Hypotermes* Holmgren (Isoptera: Termitidae: Macrotermitinae) from the Indo-Malayan Region. Indian Forest Records, vol. 10, No. 9, pp. 171-203, 10 figs.

1963a. Biology and ecology of Oriental termites (Isoptera); some observations on *Sarvaritermes faveolus* Chatterjee and Thakur (Isoptera: Stylotermitidae.) Indian Forest., vol. 89, No. 9, pp. 635-637, 1 pl., 1 table. Sept.

1964. Contributions to the knowledge of the systematics of the Himalayan north-western termite fauna. II. Description of *Microcerotermes rambanenensis* sp. nov. (Isoptera. Termitidae:Amitermitinae) from Kashmir. (Madras) Bull. Entomol., vol. 5, pp. 1-6, 1 table, 2 pls. Mar.

1964a. Redescription of *Odontotermes gurdaspurensis* Holmg. and Holmg. (Isoptera:Termitidae; Macrotermitinae.) Loc. cit., vol. 5, pp. 7-16, 3 tables, 1 text fig., 3 pls. Mar.

1964b. *Sarvitermes faveolus* gen. et sp. nov. from Kulu valley (Punjab: India), (Isoptera), with a discussion on the systematic position and relationship of the Family Stylotermitidae. Zool. Anzeiger, Leipzig (Germany), vol. 173, Heft 2, pp. 149-162, 4 figs., 2 tables. Appendix. Aug.

1964c. A new species of *Angulitermes* from North India (Isoptera: Termitidae: Termitinae). Journ. Bombay Nat. Hist. Soc., vol. 61, No. 2, pp. 348-353, 3 plates, 3 tables. Aug.

1964d. Revision of the termite genus *Microtermes* Wasmann (Isoptera: Termitidae:Macrotermitinae) from the Indian region. Indian Forest Records, n. ser., Ent., vol. 10, No. 11, pp. 219-260, 12 text figs.

CHATTERJEE, P. N., and THAPA, R. S.

1963. A new genus *Beesonitermes* from India (Isoptera: Termitidae: Amitermitinae.) Journ. Timber Dryers' and Preserv. Assoc. of India, vol. 9, No. 2, pp. 20-26, illustr. April.

1964. A new species of the genus *Grallato*termes from India. (Isoptera: Termitidae: Nasutitermitinae.) Indian Forester, vol. 90, No. 4, pp. 210-214, illustr. April.

1964a. *Speculitermes chadaensis* sp. n. from India (Isoptera: Termitidae: Amitermitinae) Indian Forester, vol. 90, No. 8, pp. 514-516, 1 fig. Aug.

CHATTERJI, S., and SARUP, P.

1962. Termites as pests of cotton and their control. Indian Cotton Growing Rev., vol. 16, No. 1, pp. 5-12. Jan.

CHATTERJI, S., SARUP, P., and CHOPRA, S. C.

1960. Field trials with some modern organic insecticides against termite damage in cotton crop. Cur. Sci., vol. 29, No. 9, pp. 356-357. Sept.

CHAWALA, D. R.

1965. Poor crop and termites, Sukh-Lal solves his problem with superphosphate and aldrin. Intensive Agric., vol. 2, No. 11, pp. 11-12. Jan.

CHEEMA, P. S., DAS, S. R., DAYAL, H. M., KOSHI, T., MAHESHWARI, K. L., NIGAM, S. S., and RANGANATHAN, S. K.

1962. Temperature and humidity in the fungus garden of the mound-building termite *Odontotermes obesus* (Rambur) Proc. Internat. Symposium on termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 4, pp. 145-149, 5 tables.

CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION

1961. Compilation of economic poisons (Pesticides) laws, pp. loose leaf to be added to, New York.

CHEN, NING-SEN

1959. [The present status of biological studies and control of termites.] (In Chinese.) [Opera Entomologica Peking, pp. 1-17.]

CHHOTANI, O. B.

1962. Biological observations on the termite, *Kalotermes beesoni* Gardner Proc. 1st All-India Cong. Zool. Calcutta Pt. 2 Scientific papers. No. 67, pp. 476-478, 1 text fig., 1 pl. Aug.

1962a. Further observations on the biology and parthenogenesis of *Kalotermes beesoni* (Kalotermitidae.) Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 2, pp. 73-75, 1 table.

1963. Miscellaneous note 19. The termite *Cryptotermes havilandi* (Sjöstedt) from the interior of India. Journ. Bombay Nat. Hist. Soc., vol. 60, No. 1, pp. 287-288, 1 pl. Apr. (pub. July 13.)

CHIAROMONTE, A.

1964. Per una corretta nomenclatura delle

termiti. Riv. di Agric. Subtrop. e Trop. An. 58, No. 1-3, pp. 114-116. Jan.-Mar.

CHIN, CHUN-TEH, and MA, SHIH-CHUN

1959. [A resume of studies on soil insects.] (In Chinese.) [Opera Entomologica Peking, pp. 234-260.]

CHISHOLM, R. D., KOBLITSKY, L., and WESTLAKE, W. E.

1962. The estimation of aldrin and chlordane residues in soils treated for termite control. U.S. Dept. Agric. Res. Serv. ARS-33-73 pp. 1-8. June.

1962a. The estimation of aldrin and chlordane residues in soils treated for termite control. Pest Control, vol. 30, No. 8, pp. 48, 50, 52-53, 66, 1 table. August.

CHOPARD, L.

1961. [The secrets of architectural art of the termites.] (In French.) Nature (Paris), vol. 89, No. 3309, pp. 21-31, illustr. Jan.

CHOUDHURI, J. C. B.

1961. New approaches to applied termitological researches in India. *In* Annual Number 1960. Nat. Acad. Sci., India. Allahabad, vol. 2, p. 125. Abstr.

1963. Idem. Proc. Nat. Acad. Sci. India Sect. B., vol. 33, No. 1, pp. 189-192.

CIFERRI, R.

1963. [The family Termitariaceae (Deuteromycetes.)] (In Italian.) Atti 1st Bot. Univ. Lab. Crittogam Pavia, vol. 20, No. 5, pp. 235-252, illustr.

CLAGG, C. F.

1965. Damage by *Coptotermes formosanus* Shiraki, Proc. Hawaiian Ent. Soc., Notes and Exhibitions, vol. 19, No. 1, p. 3. June.

1965a. Subterranean termite on Guam. Loc. cit., p. 15.

CLARK, B.

1963. Do-it-yourselfer's painful discovery is healed by professional termite operator. Pest Control, vol. 31, No. 2, pp. 18, 20, 22, 24, 9 figs. Feb.

CLEMENTS, W. B.

1963. NPCA Termite Committee says go ahead with minimum standards. Pest Control, vol. 31, No. 12, pp. 54, 56. Dec.

CLEVELAND, L. R.

1960. Photographs of living centrioles in resting cells of *Trichonympha collaris.* Arch. f. Protistenk., vol. 105, No. 1, pp. 110-112. Aug. 31.

1960a. The centrioles of *Trichomonas* and their functions in cell reproduction. Loc. cit., vol. 105, No. 2, pp. 149-162, illustr.

1960b. Effects of insect hormones on the protozoa of *Cryptocercus* and termites. *In* Stauber, L. A., ed. 1960. Host influence on parasite physiology, pp. 5-10. Ref. New Brunswick, N. J., Rutgers Univ. Press.

CLEVELAND, L. R., and GRIMSTONE, A. V.

1964. The fine structure of the flagellate *Mixotricha paradoxa* and its associated micro-organisms. Proc. Roy. Soc., Ser. B, vol. 159, No. 977, pp. 668-685, illustr.

CLOUDSLEY-THOMPSON, J. L.

1964. Desert invertebrates of Khartoum Province. Sudan Notes and Recs., vol. 45, Double No., 1964, pp. 1-11.

COATON, W. G. H.

1962. Nesting habits and mounds of the termites of Northern Rhodesia. African Wild Life, vol. 16, No. 1, pp. 61-70, 9 figs. March.

1962a. The origin and development of massive, vegetated termite hills in Northern Rhodesia. Loc. cit., vol. 16, No. 2, pp. 159-166, 9 figs. June.

1962b. Survey of the termites of the Kruger National Park. (Including diagnosis of *Fulleritermes* gen. nov.: Nasutitermitinae). Koedoe, No. 5, pp. 144-156, 12 figs.

1962c. Control of hodotermitid harvester termites in the Karoo. Journ. Ent. Soc. S. Africa, vol. 25, No. 2, pp. 318-327, 8 figs., 2 tables. Sept. 30.

1963. Survey of the termites (Isoptera) of the Kalahari thornveld and shrub bushveld of the R. S. A. Koedoe, No. 6, pp. 38-50, 22 figs., 2 tables. March.

1964. The national survey of the Isoptera [South Africa] *In*: Symposium on entomological problems, 1961 S. Africa Dep. Agric. Tech. Serv., Tech. Commun. 12, pp. 90-103, 1964.

1964a. The national survey of the Isoptera. So. Africa Dept. Agric. Tech. Serv. Sympos. on Entom. Problems, July 1961, Tech. Commun. No. 12, pp. 90-103.

COLEMAN, V. R.

1966. A bioassay technique to determine amount of termite control insecticide in soils. Pest Control, vol. 34, No. 1, pp. 32, 34, 36, 38, 2 graphs, 2 tables, 4 figs. Jan.

COLLINS, M. S., and RICHARDS, A. G.

1962. Caste and age differences in rate of

water loss and response to peanut oil and alumina in termites of Eastern U.S.A. Amer. Zool., vol. 2, No. 4, p. 514. Abst. only.

1963. Studies on water relations in North American termites. I Eastern species of the genus *Reticulitermes* (Isoptera, Rhinotermitidae. Ecology, vol. 44, No. 3, pp. 600-604. Summer.

Colwill, D. J.

1964. Damage to transmission lines and cables by pests. Pest Articles and News Summaries, Pans Sect. A 1964, vol. 10, No. 3, pp. 393-487.

Commonwealth Bureau Soil Science

1960. Bibliography on effects of termites on soil (1959-1957) (supplement to No. 41). [Annot. Bibliog.] 352, pp. 1-3. Nov.

1964. Bibliography on termites and soil formation (1964-1933). Commonwealth Bur. Soils [Annot. Bibliog.] 797, pp. 1-8.

Commonwealth Scientific and Industrial Research Organization, Division of Entomology

1962. Annual report 1961-1962, pp. 1-67. Canberra, A. C. T., Australia. (Termites, pp. 13, 61-64, illustr.)

1963. Idem. 1962-1963. (Termites, pp. 12-13, 71-76.)

Connecticut University College of Agriculture Extension Serv.

1964. Termite or ant? The differences. Conn. Univ. Ext. [Bull.] 64-24, 1 p. June.

Conner, F. B.

1965. Virginia TO pre-treats 9000 homes in four years without a callback. Pest Control, vol. 30, No. 12, pp. 28, 32, 34, illustr. Dec.

Connors, J.

1963. Hialeah mom found infected with termites. Believed unique medical case. The Miami Herald. Nov. 6, p. 2-B.

Conrad, G.

1959. Role of termites in Quaternary soil formations, Béni-Abbès region, Algeria. C. R. Acad. Sci., Paris, vol. 249, pp. 2089-2091.

Conroy, W. L.

1963. Economic entomology. Timber pests. Papua and New Guinea Dept. Agr., Stock and Fish. Ann. Rept. for 1960-1961, Nov. 1963, pp. 85, 86, termites. Port Moresby.

Coudreau, J., Fougerousse, M., Bressy, O., and Lucas, S.

1960. Recherches en vue de déterminer une nouvelle méthode destinée à aprécier la résistance d'un bois aux destructions causées par les termites (*Reticulitermes lucifugus* Rossi). Holzforschung, vol. 14, No. 2, pp. 40-51. June.

Coupin, H.

1905. Les bizarreries des races humaines. Paris, 279 pp., 214 figs., map world. (Termites, pp. 8-10, figs. 6, 7.)

Cruz, B. P. B., Figueiredo, M. B., and Almeida, E.

1962. Principal diseases and pest of the peanut in the State of São Paulo. Biológico, vol. 28, No. 7, pp. 189-195, 9 figs.

Cumber, R. A., and Eyles, A. C.

1961. Insects associated with the major fodder crops in the North Island. VI. Odonata, Orthoptera, Isoptera, etc. New Zealand Journ. Agric. Res., vol. 4, Nos. 3-4, June and August, pp. 426-440, illustr., maps. (Termites, p. 429.)

Da Costa, E. W. B., Rudman, P., and Gay, F. J.

1958. Investigations on the durability of *Tectona grandis*. Empire Forest Rev., vol. 37, No. 3, pp. 291-298, illustr.

1960. Relationships of growth factors to the durability of teak. Asia-Pacific Forestry Commission. Third Session of the Teak Sub-Commission. Document No. FAO/TSC 60/4.11.

1961. Relationship of growth rate and related factors to durability in *Tectona grandis*. Empire Forest Rev., vol. 40, pp. 308-319.

Damaschke, K., and Becker, G.

1964. [Correlation of respiration intensity of termites with changes in the impulse sequence frequency of atmospherics.] (In German.) Zeitschr. für Natforsch., vol. 19b, No. 2, pp. 157-160, 7 figs. Feb.

Das, G. M.

1957. How to utilize mound sites for growing tea. Indian Tea Assoc. News Letter, vol. 4, No. 2, pp. 8-9. Tocklai.

1962. Termites in tea. Proc. Inter. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 229-231.

1963. Some important pests of tea. Two and a Bud, vol. 10, No. 2, pp. 4-8.

Das, N. R., Chandola, L. P., and Ramola, B. C.

1965. Data on the natural durability of

timber species (installed in the test yard at New Forest, Dehra Dun) according to 1964 inspection. Journ. Timber Dryers' Preserv. Assoc. India, vol. 11, No. 2, pp. 6-12. April.

DAS, S. R., MAHESHWARI, K. L., NIGAM, S. S., SHUKLA, R. K., and TANDON, R. N.
1962. Microorganisms from the fungus garden of the termite *Odontotermes obesus* (Rambur.) Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960. (UNESCO), Sect. 5, pp. 163-165.

DAVENPORT, D.
1966. Futile termite tubing? Pest Control, vol. 34, No. 4, p. 8, 1 fig. April.

DAVID, A. L., KALYANARAMAN, V. M., and NARAYANASWAMY, P. S.
1964. Distribution, status and seasonal variations in populations in population density of the pests of sugarcane in Madras state. Indian Journ. Sugarcane Res. and Development, vol. 8, pt. 4, pp. 367-377. July-Sept.

DAVIES, O.
1959. Termites and soil stratification in equatorial Africa. Antiquity, vol. 33, pp. 290-291.

DAVIES, R. G.
1962. Review. Termites; their recognition and control. W. V. Harris 1961, Longmans, London, pp. 1-187, illustr. Science Progress p. 152. Jan.

DAVLETSHINA, A. G.
1963. [Results of experiments in control of *Anacanthotermes turkestanicus* in the Golodnaya steppe.] (In Russian.) Akad. Nauk. Turkmensk. SSR: Ashkhabad, 74-83. 1962; Referat. Zhur., Biol., 1963, No. 8E 227.

DAYAL, H. M., NIGAM, S. S., and SAXENA, M. S.
1965. Role of *Termitomyces* species in the termitarium of *Odontotermes obesus* (Isoptera.) Defence Science Journ., vol. 15, No. 1, p. 48-50, December.

DECKER, G. C., BRUCE, W. N., and BIGGER, J. H.
1965. The accumulation and dissipation of residues resulting from the use of aldrin in soils. Journ. Econ. Ent., vol. 58, No. 2, pp. 266-271, 3 figs., 3 tables. Apr.

DELACHAMBRE, J.
1965. [Researches on the Termitoxeniidae (Diptera). 1. Description of a new African species and its larva.] (In French.) Bull. Union Internat. Étude Insectes Sociaux, vol. XII, No. 3, pp. 273-283, 9 figs. Sept.

DELIGNE, J.
1962. [Observations on the transformation of the worker into the soldier of the termite of Natal *Bellicositermes natalensis* (Haviland.)] (In French.) Bull. Union Internatl. Étude Insectes Sociaux, vol. 9, No. 1, pp. 7-21, 11 figs., 1 table. Mar.
1965. Morphologie et fonctionnement des mandibules chez les soldats des termites. Biologia Gabonica, vol. 1, fasc. 2, pp. 179-186, 2 figs.

DELIGNE, J., and PASTEELS, J. M.
1963. [Endocrine phenomena in the kidneys of *Microcerotermes* sp. (Isoptera, Termitidae.)] (In French.) Gen. Comp. Endocrinol., vol. 3, No. 6, p. 694. Abstr. Dec.
1963a. [Termites 1.] (In French.) Natur. Belg., vol. 44, No. 9, pp. 462-472, 7 figs. Nov.

DEORAS, P. J.
1962. Some observations on the termites of Bombay Proc. Intern. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 3, pp. 101-103, 1 fig., 4 tables.

DESAI, R. N., and UTTANGI, J. C.
1962. On a new gregarine, *Sphaerocystis termitis* n. sp. from the Indian termite, *Capritermes incola* Wasm. Journ. Animal Morphol. and physiol., vol. 9, No. 2, pp. 110-114, illustr. Dec.

DESPORTES, I.
1963. [Development cycle of a new Gregarina parasite of termites: *Diplocystis zootermopsidis* sp. n. (Eugregarina, Diplocystidae).] (In French.) C. R. Acad. Sci., vol. 257 (No. 25, pp. 4013-4015. Dec. 16).

DEWILDE, J.
1964. *In* Rockstein, M. (Ed.) The physiology of insecta, Academic Press, vol. 1, Reproduction, p. 12.

DIFFIDENTI, G. A.
1963. [The "white" peril is always present: termites.] (In Italian.) Agr. d'Italia, vol. 9, No. 6, pp. 45-54, illustr. June.

DINI, W., and CESAR, H. C.
1960. [Methods of studying the protozoa of termites.] (In Portuguese.) Rev. Bras. Biol., vol. 20, No. 4, pp. 403-407.

DIXON, P. A.
1959. Reproductive capacity in *Termitomyces striatus* (Beeli) Heim. 9th In-

ternat. Congr. Bot., vol. 2, pp. 93-94. Abstr.
Dourojeanni Ricordi, M.
1965. Introducción al estudio de los insectos que afectan la explotación forestal en la selva Peruana. Rev. Peruana Ent. Agric., vol. 6, No. 1, pp. 27-38, illustr. Dec. 1963, pub. July 30, 1965.
Dozinskii, V. A. A.
1962. [Ukrainian termites, wood and plant pests.] (In Russian.) Akak. Nauk Turkmensk. S.S.S.R.: Ashkhabad, pp. 84-87.
Dreisbach, R. H.
1961. Handbook of poisoning: diagnosis and treatment, 3d edit., pp. 1-460, 30 figs. Lange Medical Publications, Los Altos, California. Revised 1963.
Dresner, E.
1960. Como combatir los termes o comejenes. Ext. en las Amér., vol. 5, No. 6, pp. 24-25.
Drift, J. W. P. T., Van Der
1962. [Termites or "white ants"] (In Dutch.) T. N. O.-Nieuws, vol. 17, No. 191, pt. 1, pp. 24-28, 6 figs. Jan.
Duchanois, F. R.
1961. Shortcomings in termite control in Florida. Pest Control, vol. 29, No. 11, pp. 42, 44, 46, 55. Nov.
Duperon, P., Hügel, M. F., Sipal, Z., and Barbier, M.
1964. [Analysis of sterols in phytophagic insects by mass spectometry.] (In French.) Comp. Biochem. and Physiol, vol. 11, No. 3, pp. 257-262.
DuRant, J. A., and Fox, R. C.
1966. Some arthropods of the forest floor in pine and hardwood forests in the South Carolina Piedmont region. Ann. Entom. Soc. America, vol. 59, No. 1, pp. 202-207, 1 fig., 2 tables. Jan.
Dutt, N.
1962. Preliminary observations on the incidence of termites attacking jute. Proc. Intern. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 217-218, pls. 41-42, 2 tables.
Dybas, H. S.
1961. A new genus of feather-wing beetles from termite nests in Bolivia (Coleoptera: Ptiliidae). Chicago Natural Hist. Mus. Fieldiana (Zoology), vol. 44, No. 8, pp. 57-62, figs. 17, 18. Dec 27.
Dyer, T. A.
1966. Housing authority demands furniture be termite-free. Pest Control, vol. 34, No. 2, p. 61. Feb.
Ebeling, W.
1962. Relation of lipid adsorptivity of powders to their suitability as insecticide diluents. Trans. 11th Internat. Congr. Ent., vol. 2, (sect. 7/14), pp. 451-454. 1960.
Ebeling, W., and Pence, R. J.
1965. Termite control. Prevention and control of the western subterranean termite. California Agric. Exper. Sta., Extens. Serv. Circ. 469, pp. 1-16, 6 figs. April.
Ebeling, W., and Wagner, R. E.
1961. U.C.L.A. experiments with pretreatment for subterranean termite prevention. P.C.O. News, vol. 21, No. 7, pp. 1, 4. July.
1962. Interim report on 5-year tests with pretreatment termiticides. Pest Control, vol. 30, No. 2, pp. 16, 18, 20, photo. Ebeling. Feb.
1963. Methods and equipment for treating houses with Dri-Die 67 during construction. P.C.O. News, vol. 23, No. 6, pp. 14-17, figs. A-D. June.
1964. Built-in pest control. Pest Control, vol. 32, No. 2, pp. 20-22, 24, 26, 28, 31-32, 2 figs., 3 tables. Feb.
Ehman, N.
1963. Partial fumigations. P.C.O. News, vol. 23, No. 6, pp. 18-19, illustr. June.
Eisenmann, E.
1961. Favorite foods of neotropical birds: Flying termites and *Cecropia* catkins. Auk, vol. 18, No. 4, pp. 636-638.
Emerson, A. E.
1961. Vestigial characters of termites and processes of regressive evolution. Evolution, vol. 15, No. 2, pp. 115-131, illustr. June.
1962. Vestigial characters, regressive evolution and recapitulation among termites. Proc. Internat. Symposium on Termites in Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 1, pp. 17-30.
1962a. Human cultural evolution and its relation to organic evolution of termites. Loc. cit. Sect. 6, pp. 247-254.
1965. A review of the Mastotermitidae (Isoptera), including a new fossil genus from Brazil. Amer. Mus. Nov., No. 2236, pp. 1-46, 4 figs. Dec. 17.
Emerson, A. E., and Banks, F. A.
1965. The Neotropical genus *Labiotermes* (Holmgren): its phylogeny, distribu-

tion, and ecology. (Isoptera, Termitidae, Nasutitermitinae.) Amer. Mus. Nov., No. 2208, pp. 1-33, 9 figs., 7 tables. Feb. 17.

Ericson, R. O.
1961. A glossary of some foreign-language terms in entomology. Agric. Handbk. No. 218, pp. 1-59, 4 figs. U.S. Dept. Agric., ARS. Dec.

Ernst, E.
1961. Report on termite resistance of treated plastics. Shell Agric., Chem. Bull. ADB; 846/Wd. 1.
1963. Zur Systematik und Biologie von *Pseudacanthotermes.* Symposia Genetica et Biologica Italica. Atti IV. Congr. U.I.E.I.S.-Pavia, 9-14. Sett. 1961, vol. XI, pp. 276-279. Dec. 14.
1964. Über die Funde von *Pseudacanthotermes* in Tanganyika. (Isoptera: Termitidae.) Acta Trop., vol. 21, No. 2, pp. 173-178, illustr.
1964a. Bemerkungen zu den Soldaten von *Acanthotermes acanthothorax* Sjöst. (Isoptera). Rev. Suisse Zool., vol. 71, No. 3, pp. 569-576, 4 text figs.

Esenther, G. R.
1961. The biology of the eastern subterranean termite, *Reticulitermes flavipes* (Kollar), in Wisconsin and related experiments with other species. Diss. Abs., vol. 22, No. 3, pp. 945-946. Sept. (90 pages, abstr.)

Esenther, G. R., Allen, T. C., Casida, J. E., and Shenefelt, R. D.
1961. Termite attractant from fungus-infested wood. Science, vol. 134, No. 3471, p. 50. July 7.

Esenther, G. R., and Coppel, H. C.
1964. Current research on termite attractants. Pest Control, vol. 32, No. 2, pp. 34, 36, 38, 42, 44, 46, 3 figs., 1 table. Feb.

Falls, O.
1938. Cockroach vs. termite idea. Exterminators Log, vol. 6, No. 2, p. 18.

Farb, P., and The Editors of Life.
1962. The insects. Life Nature Library, Time Inc., New York, pp. 1-192, illustr., text figs., col. plates. (Termites in Chap. 4, pp. 82-86, illustr.)

Fechino, A.
1961. Toxicology of insecticides. Antidotes and preventatives. Minerva Farmaceut., vol. 10, pp. 67-75.

Fechner, J.
1962. [Toxicology of agents for plant protection.] (In German.) Deutsch. Akad. Landwirtwiss. Tagungsber, vol. 22, pp. 111-115.

Federal Housing Administration.
1963. Minimum Property Standards for Multifamily Housing, Public. 2600, pp. 1-500. Nov.
1966. Minimum Property Standards for One and Two Living Units, Interim Revision No. 30, pp. 1-4. March.

Fernando, H. E.
1962. Termites of economic importance in Ceylon. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 205-210.

Fishbein, W. I., White, J. V., and Isaacs, H. J.
1964. Survey of workers exposed to chlordane. Industrial Medicine and Surgery, vol. 33, No. 10, pp. 726-727, 1 table. Oct.

Fleming, W. E., Parker, L. B., Maines, W. W., Plasket, E. L., and McCabe, P. J.
1962. Bioassay of soil containing residues of chlorinated hydrocarbon insecticides, with special reference to control of Japanese beetle grubs. U.S. Dept. Agric., Agric. Res. Serv., Tech. Bull. No. 1266, pp. 1-44, 12 tables. July.

Floyd, J.
1965. Phony floors trap termite operator. Pest Control, vol. 33, No. 4, pp. 46, 49, 50. April.

Forsyth, J.
1966. Agricultural insects of Ghana. Univ. Press., Accra, pp. 76-78, termites.

Fox, R. M., and Fox, J. W.
1964. Introduction to comparative entomology, 450 pp., 13.7 figs., 4.1 tables. Reinhold Publishing Corp., New York. (Isoptera, 5, 19, 20, 338, 350-354, 357, fig. 13.3 A and B.)

Frings, H., and Frings, M.
1962. Pest control with sound. Part 1, Possibilities with invertebrates. Sound, vol. 1, No. 6, pp. 13-20. Sound Subscription Dept., 335 E. 45th St., New York 17, N.Y.
1964. Animal communication. Blaisdell (Ginn), New York, pp. 1-211.

Fujii, N.
1964. [Studies on the free amino acids in Formosan termite (*Coptotermes formosanus* Shiraki). 11.] (In Japanese.) Miyazaki U. Faculty Agric. Bull., vol. 2, pp. 213-216. Mar.

Fujii, N., Segawa, M., Ochiai, N., and Shimizu, K.
1962. [Studies on the free amino acids in Formosan termite (*Coptotermes formosanus* Shiraki).] (In Japanese.) Bull. Faculty Agric., Univ. Miyazaki, vol. 8, No. 1, pp. 7-11, 1 fig. English summary. Dec.

Fulton, R. A. Smith, F. F., and Busbey, R. L.
1962. Respiratory devices for protection against certain pesticides. U.S. Dept. Agric., Agric. Research Serv. 33-76, 15 pp., 8 figs., 1 table. Sept.
1964. Idem. Loc. cit. 33-76-1, pp. 1-12, 9 figs., 1 table, revised June.

Gabe, M., and Noirot, C.
1961. Particularités histochimiques du tissu adipeux royal des termites. Bull. Soc. Zool. France, vol. 85, 1960, Nos. 5-6, pp. 376-382, figs. 1-9.
1961a. [Histochemical data in the oogenesis of termites.] (In French.) Bul. Biol. France and Belg., vol. 95, No. 3, pp. 411-430, 3 pls.

Gagliardi, P.
1963. [Termitin in animal nutrition.] (In Italian.) Romagna Agric. e Zootec., vol. 48, No. 10, pp. 350-356. Oct.

Gallo, P.
1961. [Contribution of the termite control center to the toxicology of insecticides.] (In Italian.) Boll. 1st Patol. Libro., vol. 20, Nos. 3/4, pp. 214-220.
1963. [Idem. II.] (In Italian.) Symposia Genetica et Biologica Italica. Atti IV. Congr. U. I.E.I.S.-Pavia, 9-14 Sett. 1961, vol. XI, pp. 120-126. Dec. 14.

Gay, F. J.
1961. Termite 14. Laboratory and field studies. *In* Commonwealth Scientific and Industrial Research Organization, Division of Entomology 1960-1961. Ann. Rep. pp. 37-39. Melbourne.
1962. *In* Commonwealth Scientific and Industrial Res. Org., Australia, Divis. Ent. 1961-1962 Ann. Rep. Termites Laboratory and field studies, pp. 60-62, photo. No. 12, Canberra.
1963. The synonomy, distribution and biology of *Coptotermes elisae* (Desneux). Pacific Insects, vol. 5, No. 2, pp. 421-423. July 25.
1963a. Soil treatments for termite control in Australia. Building: Lighting: Engineering. Reprint, pp. 1-4, 5 figs. August.
1963b. The control of termites in Australia. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.-Pavia 9-14 Sett. 1961, vol. XI, pp. 47-60. Dec. 14.
1963c. *In* Commonwealth Sci. and Indus. Res. Org. Australia, Div. Ent. 1962-1963 Ann. Rep., Termites Laboratory and field studies, pp. 71-74, photo. No. 10. Canberra.
1965. Idem. 1964-1965, pp. 47-48, photo. No. 7. Canberra.

Gay, F. J., and Hirst, K.
1963. Termite-proof plywood through glue line poisons. Commonwealth Sci. and Indus. Res. Org. Forest Prod. News letter No. 297, pp. 1-3, 1 fig., 1 table. June.

Gay, F. J., and Schulz, W. O.
1965. [Comparison of two water-soluble wood preservatives against termite attack.] (In German.) Holz als Roh-und Werkstoff, vol. 23, No. 1, pp. 6-9, 4 tables. Jan.

Gay, F. J., and Wetherly, A. H.
1962. Laboratory studies of termite resistance. IV. The termite resistance of plastics. Australian Commonwealth Sci. and Industr. Res. Org., Div. Ent. Techn. Pap. No. 5, pp. 1-31, 4 figs., 6 tables.

Geigy, R., Hecker, H., and Keiser, F.
1964. Parasitische Dipterenlarven in Soldaten von *Bellicositermes bellicosus* (Smeath.) (Isoptera.) Acta Tropica, vol. 21, No. 3, pp. 280-286, 5 figs., 1 table. Miscellanea.

Gentry, J. W.
1965. Crop insects of northeast Africa-southwest Asia. Agricultural Handbook No. 273, U.S. Dept. Agric., pp. 1-210, 41 figs. Jan. (Isoptera, pp. 8-9.)

Gharagozlou, I.
1962. [Anatomic and quantitative study of the adipose tissue of various castes and various stages of *Calotermes flavicollis* Fabr.] (In French.) C. R. Acad. Sci., Paris, vol. 254, No. 13, pp. 2430-2432. Mar. 26.
1962a. [Cytological and histological studies of the adipose tissue of the functional sexuals of *Calotermes flavicollis* Fabr.] (In French.) Loc. cit., vol. 255, No. 1, pp. 174-176. July 2.

Ghilarov, M. S.
1961. Review. Humid tropic research. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960. (UNESCO) 1962, pp. 1-254,

frontis., 50 figs., 16 pls. Oct. 17. Translation from Russian Entomologicheskoe Obozrenie (Ent. Review), vol. 40, No. 3, July/Sept. 1961, pp. 393-397. Russian p. 720. Amer. Inst. Biol. Sci., Washington, D.C.
1962. Opening remarks of the chairman. Sect. 4, Ecology., p. 129. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), p. 129.
1962a. Termites of the U.S.S.R., their distribution and importance. Loc. cit. pp. 131-135.

Ghose, S. K.
1964. Insecticidal control of termite, *Microtermes* sp. (Macrotermitinae, Termitidae, Isoptera.) damaging wheat crop. Indian Agriculturist, vol. 8, No. 2, pp. 87-91. July.

Giles, D. T.
1962. Wood becomes precision material in new stadium seats. Wood Preserv. News, vol. 40, No. 1, pp. 5-7, illustr. Jan.

Gipe, R. F.
1963. Termite control with EDB good in Philippine church. Pest Control, vol. 31, No. 8, p. 62. Aug.

Given, B. B.
1964. The coconut termite in the Cook Islands. South Pacific Bull., vol. 14, No. 3, pp. 25-26. July.

Glover, P. E., Trump, E. C., and Wateridge, L. E. D.
1964. Termitaria and vegetation patterns on the Loita plains of Kenya. Journ. Ecol., vol. 52, No. 2, pp. 367-377, illustr., map.

Gösswald, K.
1961. Insektenstaat und Menschenstaat. Der Imkerfreund, vol. 16, No. 5, pp. 146-151. May.
1962. On the methods of testing materials for termite resistance with particular consideration of the physiological and biological data of the test technique. Proc. Internat. Symposium on Termites in the Humid Tropics. New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 169-178, 9 figs., pls. 27-33. Oct. 17.
1962a. Beitrag zur Wirkungsweiss des Insektizids Thiodan. XI. Internat. Kong. Ent. Wien, 17-25 Aug. 1960. Verhandl. Bd. 11, Sekt. XII, pp. 605-610, 4 figs., June.

Gösswald, K., and Kloft, W.
1961. Einblicke in das Staatenleben von Insekten auf Grund radiobiologischer Studien. Der Imkerfreund, vol. 16, No. 1, pp. 7-12.
1963. Tracer experiments on food exchange in ants and termites. *In* Radiation and Radioisotopes Applied to Insects of Agricultural Importance. Proc. Symposium Internat. Atomic Energy Agency: Vienna, Internat. Publications, Inc., New York, pp. 25-42, illustr.

Gokhale, N. G., Sarma, S. N., Bhattacharyya, N. G., *et al.*
1958. Effect of termite activity on the chemical properties of tea soils. Sci. and Cult., vol. 24, p. 229.

Gonçalves, C. R., and Silva, A. G. A.
1962. [Observations on the Isoptera of Brazil.] (In Portuguese.) Arq. Mus. Nac., vol. 52, pp. 193-208, 19 figs. July.

Goodall, J.
1963. My life among wild chimpanzees. National Geographic, vol. 124, No. 2, pp. 304-308, illustr. Aug.

Goodland, R. J. A.
1965. On termitaria in a savanna ecosystem. Canadian Journ. Zool., vol. 43, pp. 641-650, 1 fig., 1 table. July.

Goulding, R. L., and Every, R. W.
1965. Oregon termites and their control. Oreg. Insect Contr. Handbook 1965, pp. 376-383.

Grassé, P. P., and Gharagozlov, I.
1963. [Ergastoplasm and protein genesis in royal adipose tissues of the yellow-necked termite (*Calotermes flavicollis*).] (In French.) C. R. Acad. Sci., Paris, vol. 257, No. 23, pp. 3546-3548, 2 pls. Dec. 4.
1964. [On a new type of cell of the adipose royal tissue in *Calotermes flavicollis* (Insecta Isoptera): endolophycyte.] (In French.) Loc. cit. vol. 258, No. 3, pp. 1045-1047. Jan. 20.

Grassé, P. P., and Hollande, A.
1963. [Flagellates of the genera *Holomastigotoides* and *Rostronympha;* chromosome structure and coiling cycle in *Holomastigotoides psammotermitidis.*] (In French.) Ann. Sci. Nat. Zool. et Biol. Anim. (ser. 12), vol. 5, No. 4, pp. 749-792. Oct./Dec.

Grassé, P. P., and Noirot, C.
1959. [The relationship between termites and tropical soils.] (In French.) Rev. Géomorphol. Dyn., vol. 10, pp. 35-40.

1960. Rôle respectif des mâles et des femelles dans la formation des sexués néoténiques chez *Calotermes flavicollis*. Bull. Union Internat. Étude Insectes Sociaux, vol. 7, No. 2, pp. 109-123, 5 tables. June.

1960a. L'isolement chez le termite à cou jaune (*Calotermes flavicollis* Fab.) et ses conséquences. Loc. cit., vol. 7, No. 4, pp. 323-331, 2 tables. Dec.

1961. Nouvelles recherches sur la systématique et l'éthologie des termites champignonnistes du genre *Bellicositermes* Emerson. Loc. cit., vol. 8, No. 4, pp. 311-359, 15 figs., 20 pls. Dec.

Greaves, T.

1960. Termites in Australian forests. Rep. 7th Commonw. Ent. Conf., 1960, p. 109.

1961. Termites 14. Termites in forest trees. *In* Commonwealth Scientific and Industrial Research Organization, Div. Ent., 1960-1961 Ann. Rep., p. 39. Melbourne.

1962. Termites as forest pests—Results of work 1957-1962. Third General Conference of the Institute of Foresters of Australia May 28–June 1, 1962, Melbourne, pp. 1-17, mimeographed.

1962a. *In* Commonwealth Sci. and Indus. Res. Org., Australia, Div. Ent., 1961-1962 Ann. Rep., pp. 63-65, photos. nos. 13-14. Termites, Canberra.

1962b. Termites in Australian forest. XI Internatl. Kong. Entom. Wien, 17-25 Aug. 1960. Verhandl. Bd. 11, Sekt. VIII, pp. 238- 240. June.

1962c. Studies of foraging galleries and the invasion of living trees by *Coptotermes acinaciformis* and *C. brunneus* (Isoptera). Australian Journ. Zool., vol. 10, No. 4, pp. 630-651, 7 figs., 1 pl., 4 tables. Dec.

1963. *In* Commonwealth Sci. and Indus. Res. Org. Australia. Div. Ent. 1962-1963 Ann. Rep. Termites in forest trees, pp. 74-76, photos. 11-12. Canberra.

1964. Problems associated with studies of termites in living Eucalypts. 37th A.N.Z.A.A.S. Congr., Canberra, A.C.T. Section K., January 24, 1964, pp. 1-4, 1 table, mimeographed.

1964a. Temperature studies of termite colonies in living trees. Australian Journ. Zool., vol. 12, No. 2, pp. 250-262, 7 figs., 1 table. Oct.

1965. *In* Commonwealth Sci. and Indus. Res. Org. Australia. Div. Ent. 1964-1965. Ann. Rep. Termites in forest trees, p. 46, photo. No. 6. Canberra.

1965a. The buffering effect of trees against fluctuating air temperature. Australian Forestry, vol. 29, No. 3, pp. 175-180, 5 figs. Sept.

Greaves, T., McInnes, R. S., and Dowse, J. E.

1965. Timber losses caused by termites, decay and fire in an alpine forest in New South Wales, Australian Forestry, vol. 29, No. 3, pp. 161-174, 4 figs., 8 tables. Sept.

Green, N., Beroza, M., and Hall, S. A.

1960. Recent developments in chemical attractants for insects. Advances in Pest Control Research, vol. 3, pp. 129-179.

Griffin, F. J.

1961. Termites. Chem. and Indus., vol. 38, pp. 1524-1526. Sept. 23.

Grimstone, A. V., and Cleveland, L. R.

1965. The fine structure and function of the contractile axostyles of certain flagellates *Oxymonas, Saccinobaculus* and *Notila*, from the gut of certain termites and the wood-feeding roach *Cryptocercus punctulatus*. Journ. Cell. Biol., vol. 24, No. 3, pp. 387-400. March.

Guagliumi, P.

1962. Las plagas de la cana de azucar en Venezuela. Minis. Agr. y Cria. Centr. Invest. Agron. Monog. 2, Oct., vol. 1, pp. 3-482, illus., vol. 2, pp. 487-850, illus.; Pt. 2, Isoptera, pp. 405-409. Pt. 3, biol.; Pt. 4, control.

Gunn, W. C.

1964. Builder "sandwiches" vapor barrier; gives termites twenty-acre feast. Pest Control, vol. 32, No. 7, pp. 50, 52, 54, 56, 1 diagram. July.

Gupta, B. D.

1960. Studies on the control of termites in sugarcane. Internatl. Proc. Congr. Soc. Sugar Cane Technol., vol. 10, pp. 961-977. Ref. 1959, pub. 1960.

Gupta, R., and Agarwal, M. K.

1963. *Odontotermes obesus* Ramb., as a pest of Japanese mint. Journ. Bombay Nat. Hist. Soc., vol. 60, No. 1, pp. 285-287, illus. Apr. (pub. July 13).

Gupta, S. D.

1960 [1962]. Morphology of the primitive termite, *Anacanthotermes macrocephalus* (Desneux) (Isoptera: Hodotermitidae). 1. External morphology of

the soldier caste. Rec. Indian Mus., vol. 58, Nos. 3/4, pp. 169-194, illustr.

1960a [1962a]. Idem. 2. External morphology of the alate and worker castes. Loc. cit., pp. 195-222, illustr.

GUZMAN, S. R.

1960. [Lethal temperature for protozoa of the termite *Calotermes chilensis*.] (In Spanish.) Invest. Zool. Chilenas, vol. 6, pp. 73-77, 1 fig., 1 table.

1961. [*Oxymonas chilensis* n. sp., flagellate symbiont of the termite *Calotermes chilensis*.] (In Spanish.) *In* Primer Congreso Chileno de Zoologia 1960. Invest. Zool. Chilenas, vol. 7, pp. 83-96, 1 fig., 3 pls. 1961, July 15.

1962. [*Stephanonympha calotermitis* n. sp., a flagellate symbiont from the Chilean termite *Calotermes chilensis* (Blanchard)] (In Spanish.) Invest. Zool. Chilenas, vol. 8, pp. 57-63, illustr.

HADLINGTON, P.

1965. Termite control in New South Wales. Pest Control, vol. 33, No. 1, pp. 36, 38. Jan.

HAGLEY, E. A. C.

1964. Role of insects as vectors of red ring disease (*Rhadinaphelenchus cocophilus*) of coconut palm in Trinidad. Nature, vol. 204, No. 4961, pp. 905-906.

HALDAR, D. P., and CHAKRAVARTY, M. M.

1964. Observations on sudanophilic simple and bound lipids in three species of termite flagellates. Acta Histochem., vol. 19, Nos. 5/8, pp. 377-381.

1964a. Cytochemical studies on three species of termite flagellates. Proc. Zool. Soc. Calcutta, vol. 17, No. 1, pp. 77-81, illustr. April.

HALL, D. G.

1966. Letters. How he handled it. Pest Control, vol. 34, No. 5, p. 8. May.

HALL, D. W.

1956. Insect damage observed in stored groundnuts. East African Agric. Journ., vol. 22, No. 2, p. 106.

HALLSTED, C. T.

1965. This can't happen here. Wood Preserving News, vol. 43, No. 6, pp. 16-17, 2 figs. June.

HAMILTON, J. R., and COBB, J. B.

1964. Termite shields in small home construction. Georgia Forest Res. Council. Georgia Forest Res. Paper 23, pp. 1-7, 1 table, 11 figs. Aug.

HARRIS, W. V.

1953. A note on termites from St. Helena. Proc. Roy. Ent. Soc. London. (A), vol. 28, pts. 1-3, pp. 13-14. Mar.

1961. Termites; their recognition and control. John Wiley & Sons. New York, pp. 1-187, 57 figs., 8 col. pls.

1961a. The recognition of termite damage. Pest Technology. July, Manchester, England, pp. 228-232, 5 figs.

1962. Termites in Europe. New Scientist, vol. 13, No. 278, pp. 614-617, 1 map, 8 figs. London.

1962a. Some observations on termites as forestry pests. Eighth British Commonwealth Forestry Conference 1962. East Africa. Termite Research Unit Reprint No. 48, pp. 1-5. London.

1962b. Opening remarks. Sect. 3. General biology. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), p. 99, Oct. 17.

1962c. Prevention of termite damage to buildings with special reference to low-cost housing in the humid tropics. Loc. cit., Sect. 6, pp. 179-181. Oct. 17.

1962d. Termites of the genus *Angulitermes* in Africa. (Isoptera, Termitidae.) Ann. Mag. Nat. Hist., ser. 13, vol. 5, No. 53, pp. 311-318, 4 figs. Nov. 15.

1963. The termites of Hong Kong. Mem. Hong Kong Nat. Hist. Soc., No. 6, pp. 1-9, 7 figs. July.

1963a. Exploration du Parc National de la Garamba. Mission H. de Saeger. Fascicule 42. (Isoptera, pp. 1-43, 21 figs., 4 pls., 3 tables. Sept. 30.)

1963b. Classification of the phytophagous Isoptera. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.-Pavia 9-14. Sett. 1961, vol. 11, pp. 193-201. Dec. 14.

1964. A new species of *Angulitermes* from Israel. (Isoptera, Termitidae.) Ann. and Mag. of Nat. Hist., ser. 13, vol. 7, pp. 171-172, 1 fig. March.

1964a. A primitive fungus comb of *Pseudacanthotermes* from the Sudan. (Isoptera, Macrotermitinae.) *In* A. Bouillon, ed. Études sur les termites africains, Edit. Univ. Léopoldville 1964, pp. 78-81.

1964b. A new phytophagous termite from Saudi Arabia. Bull. Ent. Res., vol. 55, pt. 3, pp. 479-481, 6 figs. Dec.

1965. Recent developments in termite control. Pest Articles and News Summaries, Pans, Sect. A 1965, vol. 11, pp. 33-43. Bibliography. Feb.

1965a. Termites from western Congo. Rev. Zool. Bot. Atr., vol. 71, fasc. 1-2, pp. 10-18, 2 figs. March 30.

1966. Type localities of the Isoptera described by Haviland. Proc. Linn. Soc. London, vol. 177, No. 1, pp. 11-17. Jan.

Harris, W. V., and Sands, W. A.

1965. The social organization of termite colonies. Symp. Zool. Soc. London, No. 14, pp. 113-131. April.

Haskell, P. T.

1961. Insect sounds, 189 pp., 97 figs., 2 tables. H. F. and G. Witherby, Ltd., London. (Termites, pp. 29, 59, 153.)

Hassler, R. K.

1961. How a measuring device makes for better methyl bromide fumigation. Pest Control, vol. 29, No. 7, pp. 12, 14. July.

Haverschmidt, F.

1960. Some further notes on the nesting of birds in termites' nests. Emu, vol. 60, No. 1, pp. 53-54.

Hayes, W. J., Jr.

1963. Clinical handbook on economic poisons. Emergency information for treating poisoning. U.S. Dept. Health, Education and Welfare, Public Health Service Public. No. 476, revis. 1963, pp. 1-144, 4 figs. Communicable Disease Center–Toxicology Sect., Atlanta, Ga.

Heal, R. E.

1964. Testimony for the public hearing on the registration of the economic poisons, aldrin, dieldrin, and endrin. Pest Control, vol. 32, No. 5, pp. 82-84. May.

Heaton, S. S.

1966. Life of a damp-wood termite, Pest Control, vol. 34, pp. 28a, 28b, 29-30, cover. Feb.

Helfer, J. R.

1963. How to know the grasshoppers, cockroaches and their allies, pp. 353, 579 figs. Wm. C. Brown Co., Dubuque, Iowa. (Termites, pp. 63-80, figs. 114-136.)

Herfs, A.

1954. The economic importance of termites in tropical countries. Leverkusen, pp. 1-37, illustr.

1963. [New results on research on termites.] (In German.) Zeitschr. Angew. Ent., vol. 52, No. 1, pp. 92-100.

Herlant-Meewis, H., and Pasteels, J. M.

1961. [The moulting glands of *Calotermes flavicollis* F. (Insecta: Isoptera.)] (In French.) C. R. Acad. Sci. Paris, vol. 253, No. 25, pp. 3078-3080. Dec. 18.

Hetrick, L. A.

1962. Effectiveness of insecticides in soil against termites after 15 years. Journ. Econ. Ent., vol. 55, No. 2, pp. 270-271 Apr.

Hickin, N. E.

1961. Maintenance of termite colonies in England for research purposes. Pest Technology, vol. 3, No. 4, pp. 84-86, 6 figs. Jan. London.

1961a. Termite fumigation with methyl bromide. Chem. Prod., vol. 24, No. 5, pp. 205-206. May.

1963. The insect factor in wood decay, pp. 1-336, 263 figs., 2 colored pls. Hutchinson and Co., London and New York. (Termites, pp. 267-284, figs. 221-232.)

Hocking, B.

1963. Termite behaviour in relation to spatial distribution. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14, Sett. 1961, vol. XI, pp. 280-285, 3 figs. Dec. 14.

1965. Notes on some African termites. Proc. Roy. Ent. Soc. London. Ser. A, General Entom., vol. 40, pts. 4-6, pp. 83-87, pl. 1, text fig. 1, June 29.

Hodel, C.

1962. Is the termite business becoming a a legalized racket? California Real Estate Mag., p. 10. April.

Hodson, A. C.

1965. Obituary. Holdaway, Frederick George (1902-1965.) Journ. Econ. Ent., vol. 58, No. 3, p. 594. 1 fig. photo. June.

Holmgren, L.

1963. Resistance of Ethiopian timbers to termite attack. Buildg. Res. Centre, Addis Ababa, Rept. No. 1, pp. 1-4.

Honigberg, B. M.

1963. Evolutionary and systematic relationships in the flagellate order Trichomonadida Kirby. Journ. Protozool., vol. 10, No. 1, pp. 20-63, illustr.

Hoon, R. C.

1962. The incidence of white ants (termites) in the region of the Hirakud Dam project. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 4, pp. 141-149.

Howick, C. D.

1965. Preservation treatments against termites and fungi for timber constructions. Commonwealth Sci. Indus. Res. Org. Forest Prod. News lett. 317, pp. 1-3. Apr.

HOWSE, P. E.

1962. The perception of vibration by the subgenual organ in *Zootermopsis angusticollis* Emerson! (sic) and *Periplaneta americana* L. Experimentia, vol. 18, No. 457, pp. 457-459, 1-3 reprint.

1963. [On the evolution of the production of vibrations as a communication means among termites.] (In German.) Rev. Suisse de Zool., vol. 70, F. 2, No. 15, pp. 258-267, 3 figs. July.

1963a. Oscillation movements in the termite *Zootermopsis angusticollis*. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14, Sett. 1961, vol. XI, pp. 256-268, 6 figs. Dec. 14.

1964. The nature of the insect colony. New Science, vol. 21, No. 373, pp. 90-97, 2 figs., Jan. 9. London.

1964a. An investigation into the mode of action of the subgenual organ in the termite, *Zootermopsis angusticollis* Emerson! (sic) and in the cockroach, *Periplaneta americana* L. Journ. Insect Physiology, vol. 10, No. 3, pp. 409-424, 9 figs., 1 table. June.

1964b. The significance of the sound produced by the termite *Zootermopsis angusticollis* (Hagen). Anim. Behav., vol. 12, Nos. 2 and 3, April-July 1964, pp. 284-300, illustr.

1965. Communication in the termite *Zootermopsis angusticollis* (Hagen). Proc. XII Int. Congr. Ent. London, 1964, Sect. 5: Behaviour, pp. 314-315.

1965a. The structure of the subgenual organ and certain other mechanoreceptors of the termite *Zootermopsis angusticollis* (Hagen). Proc. Roy. Ent. Soc. Lond. (ser. A)., vol. 40, pts. 10-12, pp. 137-146, 6 figs. Dec. 31.

1965b. On the significance of certain oscillatory movements of termites. Bull. Union Internat. Étude Insectes Sociaux, vol. 12, No. 4, pp. 333-345, 6 figs., 2 tables. Dec.

HRDÝ, I. (Ed.)

1960. The ontogeny of insects. Acta Symposii Evolutione Insectorum, Prague, Czechoslovakia, 1959; Academic Press, New York 1960, pp. 1-406.

1961. [A contribution to laboratory testing of termite resistance of materials.] (In Czechoslovakian.) Drevársky Výskum, vol. 6, No. 1, pp. 41-50. March.

1961a. A quick laboratory method of determining the termite resistance of materials. Beiträge zur Entomologie, vol. 11, No. 5/6, pp. 546-556, 5 figs., 4 tables. Sept. Berlin.

1961b. Zur Frage der natürlichen Dauerhaftigkeit einiger Hölzer aus China gegen Termiten. Loc. cit., vol. 11, No. 5/6, pp. 557-565, pls. 10-13, 17 figs., 2 tables. Sept.

1961c. Contribution to the knowledge of European species of the genus *Reticulitermes* (Holmgren) (Isoptera: Rhinotermitidae.) Acta faunistica entomologica Musei Nationalis Pragae, vol. 7, No. 61, pp. 97-107, 3 figs., 7 tables. Edit. 31.10.1961.

1961d. [Contribution to the study of natural resistance of some timbers against termites.] (In Czechoslovakian.) Drevársky Výskum, vol. 3, pp. 133-148.

1963. [Resistance of wood-fiber plates impregnated against termites in laboratory and field tests.] (In Czechoslovakian.) Zool. Listy, vol. 12, No. 1, pp. 75-85, illustr.

HRDÝ, I., and NOVÁK, V. J. A.

1960. Contribution to the question of nonspecificity of the exohormones. Proc. 11th Internat. Congr. Entom. Vienna, 1960 Symposium, vol. 3: Insect Chemistry, pp. 222-225, 2 figs. (Verlag Ist. Ent. Univ. Pavia 1960.)

HSIA, KAI-LING, and FAN, SHU-TEH.

1965. [Notes on the genus *Reticulitermes* Holmgren of China (Isoptera, Rhinotermitidae.)] (In Chinese.) Acta Ent. Sinica, vol. 14, No. 4, pp. 360-382, illustr. July.

HURD, P. D., JR., SMITH, R. F., and DURHAM, J. W.

1962. The fossiliferous amber of Chiapas, México. Ciencia (Méx.), vol. 21, No. 3, pp. 107-118, color. pls. I, II.

HUSSAIN, A. A.

1963. Notes on borers of date palms in Iraq. Bull. Ent. Res., vol. 54, pt. 2, pp. 345-348, illus. Aug.

HUTCHINS, R. E.

1966. Insects. Prentice-Hall, pp. 1-324, illustr. (Termites, pp. 11, 48, 162-163, 234-239, 275.)

IKEHARA, S.

(1957)

1963. The termite fauna of the Ryukyu Islands. Proc. 9th Pac. Sci. Congr.,

Entomology. Dec. 1957, pp. 9-14, illustr. Bangkok, Thailand.
1961. The formulae advocated to know the northernmost limits of the geographical distribution of termites. Abstracts of symposium papers. 10th Pac. Sci. Congr., Aug. 1961, reprint, pp. 1-3, 2 figs., 1 table. Honolulu, Hawaii.

Indian Coconut Journal.
1962. Host list of fungi etc. and insects recorded in the South East Asia and Pacific region. I. Fungi etc., vol. 15, Nos. 3 and 4, pp. 162-178. Isoptera, pp. 165-166. April-Sept.

Indian Council of Agricultural Research.
1957-1958. Ann. Rept., pp. 22-25, Entomology.

Indian Inst. Sugarcane Res., Sugarcane Breeding, Agricultural Research.
1962. Termite control, vol. 2, No. 3, p. 186.
1962a. Sugarcane breeding. Agric. Ent. Isoptera, Loc. cit., p. 190.

Ingle, L.
1965. A monograph on chlordane. Toxicological and pharmacological properties, pp. 1-88, 5 tables.

Internal Revenue Service.
1963. Bull. No. 1963-45, Nov. 12. Section 165.—Losses. 26 CFR 1.165-7: Casualty losses. Rev. Rul. 63-232.

Isherwood, H.
1963. What makes a good termite operator. With comments by editor Ken Scott. P.C.O. News, vol. 23, No. 1, pp. 8-10. Jan.
1965. How to justify your bid. Pest Control, vol. 33, No. 5, pp. 78, 80. May.

Jacobson, M.
1965. Insect sex attractants. Interscience Publishers–Div. John Wiley and Sons. New York, pp. 1-154, 10 figs., 7 tables. (Termites pp. 32, 38.)

Jacquiot, C.
1961. Some present aspects of wood preservation in France. Brit. Wood Preserv. Assoc. Rec. Annual Conv., 1961, pp. 151-164.

Jacquiot, M. C.
1965. Sur une colonie de termites de saintonge (*Reticulitermes santonensis* de Feytaud) à Varennes-sur-Loire (M.-et L.) Acad. Agric. France, Compt. Rend., vol. 51, No. 9, pp. 623-625.

Jakobi, H., and De Loyolae, Silva, J.
1959. Sôbre a defaunação bioquímica dos térmitas. Rev. Brasil. Biol., vol. 19, No. 2, pp. 113-117, 1 table. Aug. Rio de Janeiro, D. F.

Jakubski, A. W.
1965. A critical revision of the families Margarodidae and Termitococcidae (Hemiptera, Coccoididea). Trustees British Museum Nat. Hist., London, pp. 1-187, frontispiece col., 14 text figs. April.

James, F. R.
1962. Sneak attack! Here's how to discover and destroy those housewrecking termites, and ways to keep them from attacking and damaging your home. Popular Mechanics, May, pp. 129-133, 180, illustr.

Jeannel, R. G.
1960. Introduction to entomology. Hutchinson and Co., London, pp. 1-344. Isoptera, pp. 92, 93, fossil, p. 274, social life, pp. 212, 226, pl. I, A, B, figs. 117, 118, pl. 2 IX, fig. 119, 125, pl. 2-X.

Jen, Da-Fong
1964. [A preliminary study on termites infesting sugarcane and their control.] (In Chinese.) Acta Phytophyl. Sin., vol. 3, No. 1, pp. 49-60, 1 fig. Peking.

Johnston, H. R.
1963. 18 years of soil poison tests. Pest Control, vol. 31, No. 2, p. 27. Feb.
1965. Consumers all. Yearbook of Agriculture 1965. U.S. Dept. Agric., (Termites) pp. 34-37, illustr.
1965a. Soil insecticides for prevention and control of subterranean termites in buildings. Proc. XII Int. Congr. Ent. London 1964. Sect. 10 Forest Entomology, p. 687.

Joseph, K. J.
1964. Supplementary reproductives (Neoteinics) from a colony of *Microcerotermes fletcheri* Holmg. Isoptera, Termitidae. Current Sci., vol. 33, No. 2, pp. 54-55, illustr. Jan. 20.

Joseph, K. J., and Mathad, S. B.
1963. A new genus of termitophilous Atelurinae (Thysanura: Nicoletidae) from India. Bull. Union Internat. Étude Insectes Sociaux, vol. 10, No. 4, pp. 379-386, 3 figs. Dec.

Jucci, C.
1957. Genetica e sistematica. Atti Accad. Naz. Italiana Entom. Rendic. (Annov —1957), pp. 109-129.
1960. [Genetics, evolution and systematics in some insects.] (In Italian.) Quaderno No. 47—Evoluzione e Genetica

—1960. Colloquio Internazionale—Roma, 8-11 aprile 1959, pp. 105-127.
1960a. Le società degli insettí. Symposia Genetica et Biologica Italica, vol. 7, pp. 1-24.
1963. Endocrinologia comparata degli insetti sociali e differenziazione delle caste. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.-Pavia, 9-14 Sett. 1961, vol. X, pp. 73-97, 13 figs. Nov.

KALSHOVEN, L. G. E.
1962. Observations on *Coptotermes havilandi* Holmgr. (*javanicus* Kemn.) (Isoptera.) Beaufortia Zool. Mus—Amsterdam, vol. 9, No. 101, pp. 121-137, 2 pls., 1 table. May 25.
1963. Penetration of *Coptotermes hyaloapex* Holmgr. into an underground cable in West New Guinea. Ent. Ber., vol. 23, No. 2, Feb. 1, pp. 30-31, illustr.
1963a. *Coptotermes curvignathus* causing the death of trees in Indonesia and Malaya. Loc. cit., vol. 23, No. 5, May 1, pp. 90-99, illustr.
1963b. Review article. Termite problems. Tropical Abstracts. Tropical Products Dept. Roy. Trop. Inst. Amsterdam, vol. 18, No. 5, pp. 289-294. May.
1963c. *Coptotermes curvignathus* as a cause of trouble in electric systems. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14 Sett. 1961, vol. XI, pp. 223-229, 3 figs. Dec. 14.

KAPUR, A. P.
1962. Some observations on the nature of damage by *Reticulitermes chinensis* Snyder (Rhinotermitidae, Isoptera) at Shillong, Assam. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 3, pp. 105-106, pl. 20.

KATZ, H.
1962. "Buggy" drains. Pest control, vol. 30, No. 8, p. 60. Aug.
1962a. Micronized dust for wall voids? Loc. cit., vol. 30, No. 9, pp. 44, 46. Sept.
1962b. Vive la French drains? Non! Loc. cit., vol. 30, No. 12, p. 44. Dec.

KENAGA, E. E.
1963. Commercial and experimental organic insecticides. (1963 revision.) Indexed as to their scientific, common and trade names, code designations, uses and manufacturers. Bull. Ent. Soc. Amer., vol. 9, No. 2, pp. 67-103. June.

KENDEIGH, S. C.
1961. Animal ecology, 468 pp., 28-8 figs., tables 28-1. Prentice-Hall, Inc., Englewood Cliffs, N.J. (Termites, fig. 12-1, pp. 109, 164, table 9-8, pp. 174-177, 179, 251, 311-312, 338-339, 344, 347, 349, fig. 27-7.)

KENJO, Y.
1963. [Studies on termite control methods in U.S.A.] (In Japanese.) Mokuzai Kogyo, vol. 18, No. 3, pp. 132-134.

KERR, E.
1962. What do you really know about termites? Forests and People, vol. 12, No. 2, pp. 8-13. Second Q(uarter).

KETNAR, S. M.
1962. Studies on the common mound-building termites from Poona. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 3, pp. 115-116.

KEVAN, D. K. McE.
1962. Soil animals, 237 pp., 160 figs., 5 pls., 7 tables. H. F. and G. Witherby, Ltd., London. (Termites, pp. 2, 10, 18, 35, 52-55, fig. 79, 76, 89, 90, 92, 98, 99, 100, 133, 135, 140, 141, 177-179, 184, 189 et seq.)

KHALSA, H. G., NIGAM, B. S., and AGARWAL, P. N.
1964. Antitermite (Isoptera) tests with thermocoustic board. Defence Science Journ., vol. 14, No. 4, pp. 341-344.

KIRBY, C. S.
1965. The distribution of termites in Ontario after 25 years. Can. Ent., vol. 97, No. 3, pp. 310-314, 2 figs. March.

KIRBY, C. S., and HARNDEN, A.
1963. Termites in Ontario. Canada Dept. Forest Bi-Monthly Prog. Rept., vol. 19, No. 2, p. 1. Mar.-Apr.

KIRBY, J. L.
1961. Termites rank no. 2 with P.C.O.s in New Jersey. Pest Control, vol. 29, No. 5, pp. 69-71. May.

KIRTHISINGHE, F.
1961. Termites. Ceylon Coconut Planters' Rev., vol. 1, No. 4, pp. 8-15. April.

KLOTS, A. B., and KLOTS, E. B.
1959. Living insects of the world. Doubleday, pp. 1-304, 277 photos., 152 in full color. (Chap. 4, termites, pp. 23-30, 2 figs., pl. 7.)

KOCH, C. D.
1965. Termites+*Hodotermes mossambicus* +destroying the grassveld, tackle an extensive programme to eradicate

them. Farming South Africa, vol. 41, No. 4, pp. 19, 21-22, illustr. July.

KONDO, T., KUROTORI, S., TESHIMA, M., and SUMIMOTO, M.

1963. [The termiticidal wood-extractive from *Kalopanax septemlobus* Koidz.] (In Japanese.) Journ. Japan Wood Res. Soc., vol. 9, No. 4, pp. 125-129. Aug.

KOVOOR, J.

1964. [Chemical changes in poplar wood shavings under influence of a termitid: *Microcerotermes edentatus* (Wasmann).] (In French.) C. R. Acad. Sci., Paris, vol. 258, No. 10, pp. 2887-2889. Mar. 9.

1964a. [Chemical modifications induced by the termite (*Microcerotermes edentatus* Was., Isoptera, Termitidae) on sound poplar wood and one partially decayed by fungi.] (In French.) Bull. Biol. France Belg., vol. 98, No. 3, pp. 491-510, illustr.

KRAUSE, E.

1962. [Observations about the voices of the press on the theme of wood preservation.] (In German.) Prakt. Schadlingsbekampfer, vol. 14, No. 12, pp. 162-163. Dec.

KRAUSS, N. L. H.

1961. Insects from Aitutaki, Cook Islands. Proc. Hawaiian Ent. Soc., vol. 17, No. 3, p. 415. Aug.

1965. Notes and exhibitions: Jan. 1964. Proc. Hawaiian Ent. Soc. 1964, vol. 19, No. 1, pp. 2-4. June.

KRISHNA, K.

1961. A generic revision and phylogenetic study of the family Kalotermitidae (Isoptera.) Bull. Amer. Mus. Nat. Hist., vol. 122, art. 4, pp. 303-408, 81 figs., 6 tables. Sept. 15.

1962. New species and a hitherto undescribed imago caste of the genus *Calcaritermes* Snyder (Isoptera, Kalotermitidae.) Amer. Mus. Novitates, No. 2098, pp. 1-13, 6 figs., 6 tables. June 27.

1962a. New species of the genera *Allotermes* Wasmann, *Bicornitermes* Krishna, *Epicalotermes* Silvestri, and *Procryptotermes* Holmgren (Isoptera, Kalotermitidae.) Loc. cit., No. 2119, pp. 1-25, 12 figs., 13 tables. Dec. 28.

1963. The African genus *Foraminitermes* Holmgren (Isoptera, Termitidae, Termitinae.) Loc. cit., No. 2161, pp. 1-23, 11 figs., 9 tables. Nov. 27.

1963a. The evolution of the family Kalotermitidae. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14 Sett., vol. XI, pp. 202-209, 1 chart. Dec. 14.

1965. Termites (Isoptera) of Burma. Amer. Mus. Novitates, No. 2210, pp. 1-34, 12 figs., 12 tables. Feb. 17.

1965a. Nesting habits of termites. Journ. New York Ent. Soc., vol. 73, No. 1, pp. 39-40. Mar. (Apr. 19.) Abstr.

KRISHNA, K., and EMERSON, A. E.

1962. New species of the genus *Glyptotermes* Froggatt from the Papuan, Oriental, Ethiopian, and Neotropical regions. (Isoptera, Kalotermitidae.) Amer. Mus. Novitates, No. 2089, pp. 1-65, 36 figs., 36 tables. June 13.

KRISHNAMOORTY, C., and RAMASUBBIAH, K.

1962. Termites affecting cultivated crops in Andhra Pradesh and their control: retrospect and prospect. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 243-245.

KRISHNAMOORTHY, R. V.

1960. The digestive enzymes of the termite *Heterotermes indicola.* Journ. Anim. Morph. and Physiol., vol. 7, No. 2, pp. 156-161. Dec.

KRUPNICK, E.

1961. Use portable plumber's heater when drilling asphalt tile holes. Pest Control, vol. 29, No. 8, pp. 42, 44, 3 figs. Aug.

KRUTCH, J. W.

1963. Men, apes and termites. Saturday Review, vol. 46, No. 38, pp. 22-25, Sept. 21.

KURIR, A.

1962. Frassbilder der gelbfüssigen Termite (*Reticulitermes flavipes*) in der Unterwelt. Reprint Gesundheitswesen und Desinfektion, vol. 54, No. 4, pp. 56-63, reprint pp. 1-8, 21 figs. April.

1963. Möglichkeit der Bekämpfung der Termiten mit Atommüll. Holzforschung und Holzverwertung 15 Jahrg., Heft 4, pp. 67-70, 1 illustr. Wien.

1963a. Der Pilz *Termitomyces* als Nahrung für die Larven der gelbfüssigen Termite (*Reticulitermes flavipes Kollar.*) Loc. cit., 15 Jahr., Heft 5, pp. 101-107, 18 figs.

KUSHWAHA, K. S.

1960. External morphology of the termite, *Odontotermes obesus* (Rambur) (Isoptera: Termitidae), 1. Soldier. 2. Alate and worker Indian Mus. Rec., vol. 54,

Pts. 3 and 4. Sept.-Dec. 1956, pp. 209-227, illustr.: pp. 229-250, illustr. Aug. 31, 1960.
1961. A note on termites (Insecta: Isoptera) infesting sugarcane crop in Rajasthan. Cur. Sci., vol. 30, No. 6, pp. 229-230. June.
1962. Taxonomic differentiation in three species of *Odontotermes* (Isoptera, Termitidae) as based on chaetotaxy. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 1, pp. 55-62, 6 figs., 1 table. Oct. 17.
1962a. External morphology of the termite, *Odontotermes obesus* (Rambur) (Isoptera: Termitidae) 3. Chaetotaxy of the soldier, worker and alate castes. Rec. Ind. Mus., vol. 58, No. 2, pp. 71-114, illustr.
1963. Some advances in the morphological studies of Indian termites (Insecta: Isoptera.) Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14 Sett. 1961, vol. XI, pp. 296-310, 3 figs. Dec. 14.
1964. A note on infestation of termites (Insecta: Isoptera) around Udaipur (Rajasthan) (India.) Univ. Udaipur Res. Stud. 2 (Spec. No.) pp. 105-107.
1964a. A note on termites (Insecta: Isoptera) infesting sugarcane–m crop in Rajasthan (India.) Loc. cit. 2, pp. 107-108.

LANCE, W. D.
1962. Fumigating with "Acritet 34-66." P.C.O. News, vol. 22, No. 8, p. 16. Aug.

LANGENDORF, G.
1961. Handbuchfür den Holzschutz, pp. 1-330. Leipzig. (Termites, pp. 158-159.)

LANGENHEIM, J. H., and BECK, C. W.
1965. Infrared spectra as a means of determining botanical sources of amber. Science, vol. 149, No. 3679, pp. 52-54, 4 figs. July 2.

LANHAM, U.
1964. The insects. Columbia Univ. Press, New York, pp. 1-292, 73 figs. (Termites, pp. 35, 145, 154-158.)

LARSSON, Sv. G.
1962. The Copenhagen collection of amber-fossils. Entomologiske Meddeleiser, vol. 31, pp. 323-326. (Isoptera, p. 326.)
1965. Reflections on the Baltic amber inclusions. Loc. cit., vol. 34, pp. 135-142. (Isoptera, p. 140.)

LAVETTE, A.
1960. Les polysaccharides chez les flagellés symbiotiques des termites. Compt. Rend. Acad. Sci. Paris, vol. 250, No. 25, pp. 4202-4204. June 20.
1964. [Lipides colored by Sudan Black B in Flagellatae symbiotic with termites.] (In French.) Loc. cit., vol. 258, No. 3, pp. 1106-1108. Jan. 20.
1964a. [Digestion of wood by symbiotic flagellates of termites: cellulose and lignin.] (In French.) Loc. cit., vol. 258, No. 7, pp. 2211-2213. Feb. 17.

LAWS, E. R.
1966. What to do after a pesticide accident. Pest Control, vol. 34, No. 1, pp. 8-10. Jan.

LEBRUN, D.
1961. Evolution de l'appareil génital dans les diverses castes de *Calotermes flavicollis* (note préliminaire.) Bul. Soc. de France, vol. 86, Nos. 2-3, pp. 235-242, illustr. Nov. 15.
1964. Le role des corps allates dans la formation des castes de *Calotermes flavicollis*. C. R. Acad. Sci., Paris, vol. 259, No. 22, pp. 4152-4155. Nov. 30.

LEWALLEN, L. L.
1962. A glossary of insect toxicology, pp. 1-29. Edward Bros., Inc. Ann Arbor, Michigan (paperback.)

LICHTENSTEIN, E. P., SCHULZ, K. R., and COWLEY, G. T.
1963. Inhibition of the conversion of aldrin to dieldrin in soils with methylene-dioxyphenyl synergists, Journ. Econ. Ent., vol. 56, No. 4, pp. 485-489, 1 fig. Aug.

LINDAUER, M.
1965. *In* Rockstein, M. (Ed.) The physiology of insecta, vol. 2, pp. 123-186, 1965. Social behavior and mutual communication in termites and Hymenoptera.

LINSLEY, E. G., and USINGER, R. L.
1966. Insects of the Galápagos Islands. Proc. California Acad. Sci. Fourth Ser., vol. 33, No. 7, pp. 113-196, 1 table. Jan. 31. (Termites, pp. 125-126.)

SOUZA LOPES, H. DE
1941. Relatório da terceira excursão a zona da Estrada de Ferro Noroeste do Brazil realizada em Fevereiro e Março de 1940. IV. Relação do material entomológico capturado. Mem. Inst. Oswaldo Cruz, vol. 35, fasc. 3, pp. 641-660. April. (Isoptera, p. 642.)

LOSINSKY, W. A.
1958. Die Termiten im Süden der Ukraine.

Anz. landwirtschaftlichen Wissenschaft, No. 1 (Ukrainisch.)

1962. [Termites of Ukraine injurious to wood and plants. *In* Termites and their method of control.] (In Russian.) Acad. Sci. Turkmenia SSR, pp. 84-87.

LOWE, R. G.

1961. Control of termite attack on *Eucalyptus citridora* Hook. Empire Forestry Rev., vol. 40, No. 1, pp. 73-78. Mar.

LÜSCHER, M.

1959. Die Physiologie der Differenzierung der Kasten bei der Termite *Kalotermes flavicollis* (Fabr.) The ontogeny of insects. II Acta Symposii Evolutio Insectorum. Praha, pp. 161-166, 2 figs.

1960. Sozialwirkstoffe bei Termiten. XI Internatl. Kong. Entom. Wien, 17-25 Aug. 1960. Verhandl. Band 1. Sekt. V, pp. 579-582, 2 figs. (Pub. 1962.)

1961. Air-conditioned nests, etc. Sci. Amer., vol. 205, No. 1, pp. 138-145, illustr. July.

1961a. Social control of polymorphism in termites. *In* Insect polymorphism Roy. Ent. Soc. 1961, J. S. Kennedy (Ed.), pp. 57-67, 5 figs., 1 table.

1962. Sex pheromones in the termite superorganism. *In* Conference of the European Endocrinologists, 1962. Gen. and Comp. Endocrinol., vol. 2, No. 6, p. 615. Abstr.

1963. Functions of the corpora allata in the development of termites. Proc. XVI Internat. Congr. Zool., Washington, D.C., Aug. 20-27, 1963, vol. 4, pp. 244-250, 4 figs.

1963a. Hormonol regulation of development in termites. Symposia Genetica et Biologica Italica. Centro di Genetica del Consiglio, Nazionale delle Ricerche. Presso l'Università di Pavia. Reprint vol. X, pp. I-II. (Pub. Nov. 1963.)

1963b. Demonstration of a trail pheromone in termites. Loc. cit., vol. XI, Atti IV Congresso U.I.E.I.S.–Pavia, 9-14 Sett. 1961, pp. 189-192. Dec. 14, 1963.

1964. [The specific effect of male and female functional replacement reproductives upon the transformation of replacement reproductives in the termite *Kalotermes flavicollis* (Fabr.)] (In German.) Bull. Union Internat. Étude Insectes Sociaux, vol. II, No. 1, pp. 79-90, 4 figs., 3 pls. March.

LUND, A. E.

1962. Subterraneans and their environment. New concepts of termite ecology. Pest Control, vol. 30, No. 2, pp. 30-34, 36, 60-61, 2 figs., 3 tables, photo. author. Feb.

1963. Subterranean termites and fungi. Theoretical interactions. Loc. cit., vol. 31, No. 10, p. 78. Oct.

1965. Piggyback bacteria can kill termite colony. Loc. cit., vol. 33, No. 7, pp. 22, 24. July.

LUND, A. E., and ENGELHARDT, N. T.

1962. Subterranean termites and *Absidia coerulea* Bainier (Mucorales). Journ. Insect. Pathology, vol. 4, No. 1, pp. 131-132. March. New York.

LUND, H. O.

1961. Will wood preservatives block termite tubing? Pest Control, vol. 29, No. 4, pp. 58-60. April.

LUPPOVA, A. N.

1962. [Methods of planning and improvement of the construction of termite-proof houses.] [*In* Termites and their method of control.] (In Russian.) Acad. Sci. of Turkmenia S.S.R., pp. 103-109.

1963. [Termites from Central Asia.] (In Russian.) Akad. Nauk Turkmensk S.S.R.: Ashkhabad, 17-27, 1962. Referat. Zhur., Biol. 1963, No. 8E225. (Translation.)

LYON, S. R.

1963. It is necessary to drill floors to treat grade slabs, Lyon says. Pest Control, vol. 31, No. 1, pp. 46, 48, 50. Jan.

LYONS, F. H.

1964. Four million homes treated for termites since '36. Pest Control, vol. 32, No. 6, p. 52. June.

MACNAY, C. G.

1961. Import interceptions. Canad. Insect Pest Rev., vol. 39, No. 2, pp. 135-136. Jan.-May.

1963. Eastern subterranean termite (*Reticulitermes flavipes* (Kollar). Loc. cit., vol. 41, No. 4, p. 105.

MCKITTRICK, F. A.

1963. Evolutionary studies of cockroaches. Diss. Abs., Univ. Microfilms, Inc., Ann Arbor, Mich., 1963, vol. 23, No. 8, Zoology, p. 3045. Feb.

1964. Evolutionary studies of cockroaches. Memoir 389. Cornell Univ. Agric. Exper. Sta., New York State College of Agric., Ithaca, N. Y., pp. 1-197, pls. 64, text figs. 6, tables 7. Oct.

1965. A contribution to the understanding of cockroach-termite affinities. Ann.

Ent. Soc. Amer., vol. 58, No. 1, pp. 18-22, 8 figs. Jan.

McLean, L. A.
1962. The necessity, value and safety of pesticides. Velsicol Chemical Corp., Chicago, Illinois, pp. 1-19. Oct.

McMahan, E. A.
1961. Laboratory studies of *Cryptotermes brevis* (Walker) (Isoptera: Kalotermitidae) with special reference to colony development and behavior. Diss. Abs. 21(8):2414.
1962. Idem. Proc. Hawaiian Ent. Soc., vol. 18, No. 1, pp. 145-153, 1 fig., 2 tables. Aug.
1963. A study of termite feeding relationships, using radioisotopes. Ann. Ent. Soc. Amer., vol. 56, No. 1, pp. 74-82, 1 fig., 3 tables. Jan.
1963a. New radioactive tests show how termites feed. Pest Control, vol. 31, No. 2, pp. 32-34, 36, 5 figs. Feb.

Machado, A. DeB.
1963. Le concept d'espèce ethologique et son application prématurée à la systematique des termites *Apicotermes*. XVth Internat. Congr. Zool., Sect. II, Paper 9, pp. 1-3.

Mallis, A.
1964. Handbook of pest control, 4th ed., pp. 1-1148, 250 illustr. (Termites, Chap. VII, pp. 219-324, figs. 45-78.)

Manier, J. F.
1960. *Paracoleomitus grassei* n.g., n. sp. schizophyte du colon de *Calotermes flavicollis* F. Ann. Parasitol. Humaine et Compar., vol. 35, Nos. 5/6, pp. 677-686, illustr. Oct./Dec.

Manns, M.
1963. How to use insecticides and fumigants safely. Pest Control, vol. 31, No. 1, pp. 9, 11, 12, 14, 63, illustr. Jan.

Manuel, W. W.
1964. The legal requirements of a "termite report". P.C.O. News vol. 24, No. 2, pp. 20-22. Feb.

Marks, E. P., and Lawson, F. A.
1962. A comparative study of the Dictyopteran ovipositor. Journ. Morph., vol. III, No. 2, pp. 129-171, illustr. Sept.

Marshall, C. W.
1966. A digest of termite rodding techniques. Pest Control, vol. 34, No. 5, pp. 72, 74, 76, 8 figs. May.

Martínez, J. B.
1960. Estado actual de la industria Española de impregnation de maderas en autoclave. Ministeria de Agricultura. Direccion Gen de Montes, Casa y Pesca Fluvial, Servicio Inst. Forestales Sect. Micologia Forestal, Patologia y Conservac de Maderas, Año 31, pp. 1-83, 31 pls., 14 text figs., 1 map. Madrid.
1963. [Investigations on termiticides and woods resistant to termites.] (In Spanish.) Loc. cit., Año 34, No. 81, pp. 1-119, figs., 17 plates, 24 tables. Madrid.

Martynova, O. M.
1962. *In* Rodendorf, B. B., ed. [Fundamentals of paleontology. A manual for paleontologists and geologists.] vol. 9, 1962, 560 pp. illus. Moscow. (In Russian.) Isoptera, pp. 112-113, illustr.

Mason, G. G. W.
1963. Preservation of house timbers in New Zealand. Int. Pest Control, vol. 5, No. 1, pp. 19-20.

Mathen, K., Kurian, C., and Mathew, J.
1964. Field control of termites infesting germinating nuts in coconut nursery. Indian Coconut Journ., vol. 17, No. 3, pp. 127-136, illustr. Apr.-June.

Mathieu, H.
1962. [Termites.] (In German.) Holzforsch. und Holzverwert., vol. 14, Nos. 5/6, pp. 97-103, 22 figs., 2 tables. Dec. Austria.

Mathur, R. N.
1962. Enemies of termites (white ants). Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 4, pp. 137-139.
1962a. Important problems in forest entomology of India. XI Internat. Kong. Entom. Wien, 17-25 Aug. 1960. Verhandl. Bd. II, Sekt. VIII, pp. 277-283. (Termites, p. 281.)

Mathur, R. N., Chatterjee, P. N., and Thapa, R. S.
1965. Prophylactic efficacy of various insecticides in the protection of freshly felled timbers in storage against insect borers and subterranean termites. Dehra Dun. Forest Res. Inst. Indian Forest Bull. (n.s.) 241, pp. 1-23.

Mathur, R. N., and Sen-Sarma, P. K.
1961. *Capritermes orientalis*, a new species from Burma (Isoptera: Termitidae: Termitinae.) Bull. Ent., No. 2, pp. 1-4, 1 fig., 1 table. March. Madras.

Mathur, R. N., and Sen-Sarma, P. K.
1961. *Capritermes orientalis*, a new species from Burma (Isoptera: Termitidae:

Termitinae.) Bull. Ent., No. 2, pp. 1-4, 1 fig., 1 table. March. Madras.

1962. Notes on the habits and biology of Dehra Dun termites. Timber Dryers' and Preservers' Assoc. India, vol. 8, No. 1, pp. 1-18, pls. 4, 5. Jan.

1962a. Imago caste of *Odontotermes assmuthi* (Holmgren) [Isoptera: Termitidae.] Bull. Ent., No. 3, pp. 7-12, 3 figs., 1 table. March.

Mathur, R. N., and Singh, B.

1960. A list of insect pests of forest plants in India and the adjacent countries. (Arranged alphabetically according to the plant genera and species for the use of forest officers.) Pt. 7. List of insect pests of plant genera "L" to "O" (*Lablab* to *Oxytenanthera*). Forest Res. Inst. Dehra Dun. Indian Forest B. (n.s.), vol. 171, No. 6, (1959) pp. 1-148. (Termites, pp. 32, 34, 37, 41, 57, 73, 91, 110, 119, 136.)

1960a. Idem. Pt. 8. List of insect pests of plant genera "P" to "R" (*Paederia* to *Rumex*). Loc. cit., vol.. 171, No. 7 (1960) pp. 1-130. (Termites, Isoptera, pp. 27, 30, 34, 41, 47, 70, 75, 83, 105, 111.)

1961. Idem. Pt. 9. List of insect pests of plant genera "S" (*Sabia* to *Syzygium*). Loc. cit., vol. 171, No. 8, pp. 1-88. (Isoptera, pp. 3, 6, 9, 14, 17, 21, 30, 33, 47, 57, 65, 72, 83, 85.)

1961a. Idem. Pt. 10. List of insect pests of plant genera "T" to "Z" (*Tabernaemontana* to *Zizyphus*). Loc. cit., vol. 171, No. 9, pp. 1-116. (Isoptera, pp. 15-16, 35, 49, 92, 97, 106.)

Mathur, R. N., and Thapa, R. S.

1961. *Pseudocapritermes fontanellus* sp. nov. from South India. Journ. Timber Dryers and Preserv. Assoc. India, vol. 7, No. 3, pp. 3-7, 1 fig., 1 pl., 1 table. July.

1962. A new genus of Nasutitermitinae from India (Isoptera, Termitidae.) Indian Forester, vol. 88, No. 1, pp. 49-52, 3 figs., 1 table. Jan.

1962a. *Microcapritermes* gen. n. from India (Isoptera: Termitidae: Termitinae.) Loc. cit., vol. 88, No. 5, pp. 370-375, illustr. May.

1962b. A new species of *Stylotermes* (Isoptera: Rhinotermitidae: Stylotermitinae.) from India. Journ. Timber Dryers' and Preserv. Assoc. of India, vol. 8, No. 4, pp. 4-8, 2 figs. Oct.

1962c. A revised catalogue of Isoptera (white ants) of the Entomological Reference Collection at the Forest Research Institute, Dehra Dun. Indian Forest Leafl. 167, pp. 1-122.

Matsuzawa, H.

1963. On the distribution of the three species of wood-dwelling termites in Shikoku Island of Japan. Kontyû, vol. 31, No. 2, pp. 99-104, 3 figs., 1 map. June.

Matsuzawa, H., and Tani, S.

1962. [On the distribution of Katan termite *Glyptotermes fuscus* (Oshima) in the southeastern district of Shikoku] (In Japanese.) Jap. Journ. Appl. Ent. and Zool., vol. 6, No. 3, pp. 247-248, map. Sept.

Meikle, R. W., and Stewart, D.

1962. Structural fumigants. The residue potential of sulfuryl fluoride, methyl bromide, and methane-sulfonyl fluoride in structural fumigations. Agric. and Food Chemistry, vol. 10, No. 5, pp. 393-397, 2 figs., 4 tables. Sept./Oct.

Meikle, R. W., Stewart, D., and Globus, O. A.

1963. Fumigant mode action: drywood termite [*Kalotermes minor*] metabolism of Vikane fumigant as shown by labeled pool technique. Journ. Agric. and Food Chem., vol. II, No. 3, pp. 226-230, 3 figs., 3 tables. May/June.

Mendes, M. A.

1959. A entomofauna do castanheiro (*Castanea sativa* Miller) no concelho de moimenta da beira. Direcção Geral dos Serviços. Florestais e Ayuicolas. Publiçaões, vol. 26. Tomo 1°11, pp. 136-137.

Menon, K. P. V., and Pandalai, K. M.

1958. The coconut palm, a monograph Ernakulam, S. India, pp. 1-384, illustr. (Insect pests, Chap. 14, p. 282. Isoptera.)

Merrick, G. D.

1961. Wood preservation statistics 1960. Proc. Amer. Wood Preserv. Assoc., vol. 57, pp. 219-253, 17 tables, 1 map.

1962. Idem. 1961. Loc. cit., vol. 58, pp. 253-287, 17 tables, 1 map.

1963. Idem. 1962. Loc. cit., vol 59, pp. 235-269, 17 tables, 1 map.

1964. Idem. 1963. Loc. cit., vol. 60, pp. 201-235, 17 tables, 1 map.

1965. Idem. 1964. Loc. cit., vol. 61, pp. 267-301, 17 tables, 1 map.

METCALF, R. L. (Ed.)
1965. Advances in pest control research, vol. 6, John Wiley and Sons, New York, pp. I-VII, 1-289, illustr.
MICHELBACHER, A. E.
1965. Obituary. Essig. Edward Oliver (1884-1964). Pan-Pacific Entomologist, vol. 41, No. 4, pp. 207-234, 4 photos., 5 figs. Oct.
MILLER, E. M.
1964. Biology of termites. Biological Sciences Curriculum Study Pamphlets, No. 17, pp. 1-36, illustr. D. C. Heath and Co., Boston.
MINKO, G.
1965. Termites+*Porotermes adamsoni*—Froggatt+in living *Pinus radiata*—D-Don. Victoria Forests Comn. Forestry Tech. Papers 15, pp. 1-3. April.
MISRA, J. N.
1962. Opening remarks by chairman. Sect. 5. Intestinal cellulose digesting symbionts. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), p. 153.
1964. Physiology of digestion in termites. Indian Forester, vol. 90, No. 3, pp. 131-136. Mar.
MOCKFORD, E. L.
1965. South African Psocoptera from termite nests. Ent. News, vol. 76, No. 7, pp. 169-176, 7 figs. July.
MOORE, A. D.
1964. DDT and DDE residues in soil at the Beltsville, Md., aerial test circle in 1963. U.S. Forest Serv. Res. Note WO-4, pp. 1-3. Mar.
MOORE, B. P.
1962. *In* Commonwealth Sci. and Indus. Res. Org., Australia, Div. Ent., 1961-1962 Ann. Rep., Biochemical studies on termites, pp. 13-15, photo. no. 5. Canberra.
1962a. Coumarin-like substances from Australian termites. Nature [London], vol. 195, No. 4846, pp. 1101-1102. Sept. 15.
1963. *In* Commonwealth Sci. and Indus. Res. Org. Australia, Div. Ent., 1962-1963 Ann. Rep., Biochemical studies on termites, pp. 12-13. Canberra.
1964. Volatile terpenes from *Nasutitermes* soldiers. (Isoptera, Termitidae.) Journ. Insect Physiology, vol. 10, No. 2, pp. 371-375, 1 fig., 1 table. Apr.
1965. *In* Commonwealth Sci. and Indus. Res. Org. Australia, Div. Ent., 1964-1965., Ann. Rep., Biochemical studies on termites, pp. 17-18. Canberra.
MOORE, H. B.
1963. Termites and powder-post beetles. North Carolina Pesticide Manual, p. 103. State College Record, vol. 62, No. 5. Jan.
MORRIS, W. J.
1963. House hardly up when termites attack. Pest Control, vol. 31, No. 11, pp. 44, 46, 3 figs. Nov.
MOSCONI, P. B.
1963. Histological and histochemical researches on endocrine system of termites. Symposia Genetica et Biologica Italica, vol. X, pp. 22-28, 5 figs. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14 Sept. 1961. November 1963.
MUESEBECK, C. F. W.
1965. A new diapriid (Hymenoptera: Diapriidae) from termite nests from South Africa. Journ. Ent. Soc. Southern Africa, vol. 27, No. 2, pp. 188-190, 1 fig. Feb. 28.
MUKERJI, D., and CHOWDHURI, R.
1962. Developmental stages of *Odontotermes redemanni* (Wasm.) Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 2, pp. 77-95, 22 figs., pls. 3-19.
MUMFORD, B. C.
1964. List of intercepted plant pests, 1963. U.S. Dept. Agric., Agric. Res. Serv., Plant Quarantine Div., pp. 1-76. April.
1965. Idem, 1964, Loc. cit., pp. 1-76. April.
1966. Idem, 1965, Loc. cit., pp. 1-88. March.
NAKAJIMA, S., SHIMIZU, K., and NAKAJIMA, Y.
1962. [Studies on termite earth and termite runways of the Formosan termite, *Coptotermes formosanus* Shiraki.] (In Japanese.) Bull. Faculty Agric., Univ. Miyazaki, vol. 8, No. 1, pp. 59-74, 1 fig., 17 tables. Dec. (English summary.)
1963. [Studies on the biological influence of the termites exposed to Co^{60} gamma source. 1.] (In Japanese.) Loc. cit., vol. 8, No. 2, pp. 340-346. Mar.
1964. [Analytical studies on the vitality of colonies of the Formosan termite *Coptotermes formosanus* Shiraki. Two seasonal fluctuations on the external characters of the workers, the ratio of caste-member and carbon dioxide in the nest of a colony.] (In Japanese.)

Loc. cit., vol. 9, No. 2, pp. 222-227. Mar.

NARAYANAMURTI, D.
1962. Termites and composite wood products. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi Oct. 4-12, 1960 (UNESCO) Sect. 6, pp. 185-197, 3 figs., pls. 35-40, 17 tables.

NARAYANAMURTI, D., and GEORGE, J.
1961. Preliminary note on the preservative treatment of hardboards. Svensk Papperstidning, vol. 64, No. 18, pp. 667-669, 5 figs., 4 tables.

NARAYANAMURTI, D., PRASAD, B. N., and GEORGE, J.
1961. Protection of chipboards from fungi and termites. Norsk. Skogindus, vol. 15, No. 9, pp. 375-376, 2 tables. Sept. Oslo.

NASH, L. M.
1964. Termites bring down the house. The Catholic Digest, vol. 28, No. 8, pp. 94-96, 1 fig. June.

NEL, J. J. C.
1964. [The termite [*Hodotermes mossambicus*] in the Orange Free State area.] (In Dutch.) *In*: Symposium on entomological problems 1961. South Africa Dept. Agric. Tech. Serv., Tech. Commun. 12, pp. 104-110.

NELSON, J. A.
1966. Half the world's termites found in London. Pest Control, vol. 34, No. 2, p. 50, photo. Feb.

NELSON, R. H.
1965. Obituary. Costa Lima, A. da (1887-1964). Ann. Ent. Soc. Amer., vol. 58, No. 5, p. 770, 1 fig. photo. Sept.

NEWSAM, A., and RAO, B. S.
1963. Control of *Coptotermes curvignathus* Holmgren with chlorinated hydrocarbons. Proc. 9th Pac. Sci. Congr., Entomology. Dec. 1957, p. 99. Abstr. Bangkok, Thailand.

NEW SOUTH WALES, DEPT. OF AGRICULTURE, ENTOMOLOGY BRANCH.
1964. Termite or "white ants" (Isoptera). Agric. Gaz. N. S. Wales, vol. 75, No. 6, pp. 1121-1122, illustr. June.

FUDALEWICZ-NIEMCZYK, W.
1962. [Polymorphism of the termites, determination of the castes and establishment of new communities.] (In Polish.) Przeglad Zool., vol. 6, No. 2, pp. 137-155, illustr.
1965. Ontogenèse de l'innervation des organes sensoriels des antennes chez *Reticulitermes lucifugus santonensis* Feyt. Bull. Union Internat. Étude Insectes Sociaux, vol. XII, No. 3, pp. 241-252, 4 figs., 1 table. Sept.
1965a. Organogenèse des nerfs et des trachées alaires du termite *Reticulitermes lucifugus santonensis* Feyt. Loc. cit. vol. XII, No. 4, pp. 309-320, 5 figs., 1 table. Dec.

NOIROT, C.
1960. South African Animal Life. Results of the Lund University Expedition in 1950-1951, vol. 7, Chapter III, Isoptera, pp. 19-24.
(1960) 1962. Le cycle saisonnier chez les termites. XI. Internat. Kong. Entom. Wien, 17-25 Aug. 1960. Verhandl. Band. 1. Sekt. v., pp. 583-585.
(1960a) 1962a. L'évolution de la fauna de termites des savanes côtières de Côte d'Ivoire. Loc. cit. Sekt. VI, pp. 658-659.
1963. Isoptères (Termites). Encyclopédie de la Pléiade. Zoologie vol. 2 Les Arthropodes, pp. 636-662, 5 figs.

NOIROT, C., and BODOT, P.
1964. [The flight of *Allognathotermes hypogeus* Silv. (Isoptera, Termitidae).] (In French.) C. R. Acad. Sci., Paris, vol. 258, pp. 3357-3359. Mar. 23.

NOIROT, C., and NOIROT-TIMOTHÉE, C.
1963. [Construction and reconstruction of the nest of *Cubitermes fungifaber*.] (In French.) Symposia Genetica et Biologica Italica, Atti. IV Congresso U.I.E.I.S.–Pavia, 9-14 Sett. 1961, vol. XI, pp. 180-188, 3 figs. Dec. 14.
1965. La glande sternale dans l'évolution des termites. Bull. Union Intern. Étude Insectes Sociaux, vol. XII, No. 3, pp. 265-272, 2 figs. Sept.
1965a. [Ultrastructure of the sternal gland of the termite *Calotermes flavicollis*.] (In French.) Proc. Internat. Congr. Ent. 12th Congr. London 8-16 July, p. 129.

NOIROT-TIMOTHÉE, C., and NOIROT, C.
1965. L'intestin moyen chez la reine des termites supérieurs. Étude au microscope electronique. Ann. Sci. Nat. Zool. et Biol. Anim., vol. 7, fasc. 1, pp. 185-208, illustr. Jan.-Mar.

NOLAN, T.
1962. Faulty wiring causes fire during tarp fumigation. Pest Control, vol. 30, No. 6, pp. 48, 52, 1 fig. June.

NUTTING, W. L.
1965. Observations on the nesting site and biology of the Arizona dampwood

termite *Zootermopsis laticeps* (Banks) (Hodotermitidae.) Psyche, vol. 72, No. 1, pp. 113-125, 3 figs., 2 tables. March.)
1965a. Termites of the Southwest. P.C.O. News, vol. 25, No. 11, Supplement Arizona Pest Control, pp. 1-5, 7 figs. Nov.

O'Brien, R. E., Reed, J. K., and Fox, R. C.
1965. Insecticide distribution in soils following application by soil injector rods. Pest Control, vol. 33, No. 2, pp. 14-15, 42, 44, 2 figs., 2 tables. Feb.

Ogle, J. A., Jr.
1962. Complete, modern termite fumigation van designed by California operator tired of damaged and lost equipment. Pest Control, vol. 30, No. 5, pp. 82, 84-86, 3 figs. May.

Oregon, State Univ., Federal Coop. Ext. Serv.
1962. Dampwood termite [*Zootermopsis angusticollis.*] control. Oreg. State U. Ext., Ext. Circ. 700, pp. 1-6, illustr. folder. Mar.

Ortiz Cespedes, M. R.
1964. [Wood and wood products exposed to termite (*Calotermes chilensis*) attack; durability of particle board.] (In Spanish.) Rev. el Madero, vol. 10, pp. 21-22. Aug.

Osman, M. F. H., and Kloft, W.
1961. Untersuchungen zur Insektiziden Wirkung de verschiedenen Bestandteile des Giftes der Kleinen roten Waldameise *Formica polyctena* Foerst. Bull. Union Internat. Étude Insectes Sociaux, vol. 7, No. 4, pp. 383-395, 2 figs., 5 tables. Dec.

Paclt, J.
1965. [*Cyphoderus trinervoidis* n. sp. a new termitophile from the Transvaal (Insecta, Collembola.)] (In German.) Senckenberg Biol., vol. 46, No. 1, pp. 59-60, illustr. March 26.

Pasteels, J. M.
1965. Polyéthisme chez les ouvriers de *Nasutitermes lujae* (Termitidae, Isoptères). Biologia Gabonica, vol. 1, fasc. 2, pp. 191-205, 5 figs.

Patel, R. M.
1962. Effect of BHC formulation on the control of field termites in Gujarat. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 219-221, 4 tables.

Paul, C. F., Agarwal, P. N., and Ausat, A.
1965. Toxicity of solvent extract of *Acorus calamus* Linn. to some grain pests and termites. Indian Journ. Ent., vol. 27, pt. 1, Short notes pp. 114-117, 1 table. March.

Paulian, R.
1961. Faune de Madagascar. XIII. La zoogéographie de Madagascar et des îles voisines, pp. 1-484, illustr. Publication l'Institut Recherche Scientifique. Tananarive-Tsimbazaza.
1962. Un nouveau termite malgache. Nat. Malgache, vol. 13, f. unique, p. 275.

Pawar, J. G., and Sood, N. K.
1964. When fore-armed against them,. termites need hold no terror for the farmer. Indian Farming, vol. 14, No. 7, pp. 17-19. Oct.

Payne, J. A., and Crossley, D. A., Jr.
1966. Animal species associated with pig carrion. Oak Ridge National Laboratory, ORNL–TM–1432, p. 44.

Pemberton, C. E.
1961. Important Pacific insect pests of sugar cane. Abstracts of symposium papers. Zoology and Entomology 10th Pac. Sci. Congr. Aug. 1961. Honolulu, Hawaii, pp. 197-198.
1964. Highlights in the history of entomology in Hawaii 1778-1963. Pacific Insects, vol. 6, No. 4, pp. 689-729. Dec. 30.
1965. Obituary. Fullaway, David Timmins. (1880-1964). Proc. Hawaiian Entom. Soc., vol. 19, No. 1, pp. 39-45, 1 fig. photo. June.

Phelps, A.
1965. Respiration rate of the termophilic mite *Thermocarus nevadiensis*. Acarina. Abstr. Amer. Zool., vol. 5, No. 4, p. 705.

Pickens, A. L.
1962. Caste in ants, bees and termites. *In*: Fifty-ninth annual meeting North Carolina Acad. Sci., 1962. Journ. Elisha Mitchell Sci. Soc., vol. 78, No. 2, p. 101, 1962. Abstr.

Plateaux-Quénu, C.
1961. Les sexués de remplacement chez les insectes sociaux. Ann Biol., ser. 3, vol. 37, fasc. 5-6, pp. 177-216. May-June. (Termites, pp. 178-185.)

Prashad, B., and Sen-Sarma, P. K.
1959. Revision of the termite genus *Nasutitermes* Banks (Isoptera: Termitidae: Nasutitermitinae) from the Indian region. Indian Counc. Agric. Research (I.C.A.R. Monograph No. 10.23), New Delhi, pp. 1-66, illustr.

1960. Revision of the termite genus *Hospitalitermes* Holmgren (Isoptera, Termititidae, Nasutitermitinae) from the Indian region, loc. cit., Monograph No. 10.29 June pp. 1-32, 9 figs.

PRESTAGE, J. J., SLIFER, E. H., and STEPHENS, L. B.

1963. Thin-walled sensory pegs on the antenna of the termite worker, *Reticulitermes flavipes*. Ann. Ent. Soc. Amer., vol. 56, No. 6, pp. 874-878, 10 figs. Nov.

PROTA, R.

1962. [Termite infestation in Sardinia.] (In Italian.) Boll. 1st Patol. Libro, vol. 21, Nos. 1/2, pp. 1-35, 14 figs., 2 maps. Rome.

PRUTHI, H. S., and BATRA, H. N.

1960. Important fruit pests of North-West India. Indian Council of Agric. Res., New Delhi, pp. 1-113. (Termites, p. 96.)

PUCKETT, P. P.

1965. The termite, an ancient architect. Frontiers, vol. 29, No. 3, pp. 84-85, illustr. Feb.

PURUSHOTHAM, A.

1962. Some aspects of protection of building materials against termites attack. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO) Sect. 6, pp. 237-240, 4 tables.

RAMAGE, A.

1964. Note on the use of ethylene dibromide for the control of termite colonies. Journ. Ent. Soc. Australia, (N.S.W.) vol. 1, pp. 26-27, July 1.

RAMSDEN, C. B.

1962. Waterlogged soil created pressure problems under slab of office vault. Pest Control, vol. 30, No. 7, pp. 48, 50. July.

RANAWEERA, J. W.

1962. Termites on Ceylon tea estates. Tea Res. Inst. Tea Quart., vol. 33, Pt. 2, pp. 88-103, illustr. June.

RAO, D. S.

1958. Hazards to potato crop in the soil. Mysore Agric. Journ., vol. 33, No. 4, pp. 200-201, illustr.

RAO, K. P.

1962. Occurrence of enzymes for protein digestion in the termite *Heterotermes indicola*. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 2 Physiology and Development, pp. 71-72, 1 table.

RATNASWAMY, M. C.

1961. Anatomical studies in the Italian millet (*Setaria italica* Beauv.) in relation to termite resistance. Madras Agric. Journ., vol. 48, No. 9, pp. 341-344. Sept.

RATNER, H.

1963. Spot and stop moisture conditions; avoid second-story termite attack. Pest Control, vol. 31, No. 7, pp. 38, 40, 42, 4 figs. July.

REDDY, D. B.

1962. Termites in relation to agriculture. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960. (UNESCO), Sect. 6, pp. 225-227.

REINIGER, C. H.

1953. Algumas observações sôbre os cupins que atacam prédios e móveis. Bol. Campo, Rio de Janeiro, vol. 64, pp. 21-22.

REISCH, J.

1961. [Forest pests in Kenya (E. Africa.)] (In German.) Anz. f Schadlingsk., vol. 34, No. 8, pp. 113-117. Aug.

RENO, J.

1962. Protection against termites—Houses with basements. California Lumber Merchant, vol. 40, No. 3, June 1, pp. 26, 28, 1 fig.

1962a. Protection against termites—Houses with crawl spaces. Loc. cit., vol. 41, No. 2, July 15, p. 30.

1962b. Protection against termites—Houses with slab floors. Loc. cit., vol. 41, No. 4, Aug. 15, pp. 32-33, figs. 13-14.

1962c. Protection against termites, pp. 1-4, 4 figs. Pacific Lumber Co., Chicago, Ill.

RESCIA, G.

1960. [*Kalotermes flavicollis* in nests treated with gamma BHC.] (In Italian.) Boll. 1st Pat. Libro, vol. 19, fasc. 3-4, pp. 89-109, 8 figs. Rome.

1960a. [*K. flavicollis* on sheets of glass sprayed with gamma BHC.] (In Italian.) Loc. cit., pp. 115-135, 4 figs.

1960b. [A note on treatment of *K. flavicollis* with orthodichlorobenzene.] (In Italian.) Loc. cit., pp. 141-145.

1963. [Conservative treatment of relics in the Garibaldi House with Xylamon. (Isoptera, Fungi.)] (In Italian) Loc. cit., vol. 22, fasc. 1-4, pp. 123-133.

RESCIA, G., and BONAVENTURA, G.

1961. [New foci of termite infestation.]

(In Italian.) Boll. ist. Patol. Libro, vol. 20, Nos. 3-4, p. 260.

REYNOLDS, W. B., JR.

1963. Human infection with termites. Journ. Amer. Medical Assoc., vol. 186, No. 4, Oct. 26, p. 426.

RICCI, P.

1961. [On a new termite focus of infestation in the Ministry of Public Instruction.] (In Italian.) Boll. ist Patol. Libro, vol. 20, Nos. 3-4, pp. 260-262. Illustr.

1961a. [Termite infestation in the Oratorio del Caravita.] (In Italian.) Loc. cit., vol. 20, Nos. 3-4, pp. 262-263. Illustr.

RICHARD, G.

1963. Le système nerveux des termites—Contribution à l'étude de son ontogenèse post embryonnaire. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14 Sett. 1961, vol. XI, pp. 157-174. Dec. 14.

RICHMOND, E. A.

1962. The fauna and flora of Horn Island, Mississippi. Gulf Coast Research Laboratory, Gulf Research Reports, vol. 1, No. 2, pp. 59-106, 27 figs. Ocean Springs, Miss. April (Termites, p. 77.)

RILEY, N. D.

1962. Review. Termites; their recognition and control. W. V. Harris 1961 Longmans, London, pp. 1-187, illustr. Nature (London), vol. 193, No. 4819, pp. 916-917. March 10.

RITTER, H.

1964. Defense of mate and mating chamber in a wood roach [*Cryptocercus punctulatus*]. Science, vol. 143, No. 3613, pp. 1459-1460. Mar. 27.

RONDENDORF, B. B. (Ed.)

1962. [Fundamentals of paleontology. A manual for paleontologists and geologists, vol. 9, pp. 560, illustr. Moscow.] (In Russian.)

ROONWAL, M. L.

1962. Address by the president. Sect. I. Systematics and morphology. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), pp. 9-16.

1962a. Recent developments in termite systematics. Loc. cit., Sect. I, pp. 31-50, 3 figs., pls. 1-2.

1962b. Biology and ecology of Oriental termites. No. 5. Mound structure, nest and moisture-content of fungus combs in *Odontotermes obesus*, with a discussion on the association of fungi with termites. Rec. Ind. Mus., vol. 58, pts. 3 and 4, pp. 131-150, 2 figs., 4 pls. 1 table. Dec.

1964. Termite measurements and indices.—*In* Études sur les termites Africains UNESCO, Léopoldville (Univ. Lovanium), pp. 69-75.

ROONWAL, M. L., and BOSE, G.

1961. A redescription of the Indian termite *Odontotermes bellahunisensis* Holmg. and Holmg. with description of a new subspecies from Rajasthan. Journ. Bombay Natur. Hist. Soc., vol. 58, No. 3, pp. 580-594, 2 pls., 2 text figs., 5 tables. Dec.

1962. An African genus, *Psammotermes,* in Indian termite fauna, with fuller description of *P. rajasthanicus* from Rajasthan, India. Rec. Ind. Mus., vol. 58, pts. 3 and 4, pp. 151-158, 2 figs., 2 pls., 2 tables. Dec.

1964. Termite fauna of Rajasthan, India. Zoologica, Stuttgart, vol. 40 (Lief. 3), [Heft 113], VI+58 pp., 5 pls., 24 text figs., 8 tables.

ROONWAL, M. L., and CHATTERJEE, P. N.

1961. Control of the mound-building termite (*Odontotermes obesus*) in India with chlorinated hydrocarbons, etc. Indian Forest Rec., vol. 10, No. 4, pp. 67-78, 4 pls., tables 2. Entomology 1960. Delhi 1961.

1962. Destruction of colonies of mound-building termites in India. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 211-212.

ROONWAL, M. L., CHATTERJEE, P. N., and THAPA, R. S.

1961. Experiments for the control of subterranean termites—surface treatment of timber, soil poisoning and mud-wall poisoning. India Forest Rec. Entomology, vol. 10, No. 5, pp. 79-116, illustr.

1962. Recent results of work on the protection of timber against subterranean termites in India. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 183-184, pl. 34, 2 tables.

1962a. Anti-termites characteristics of a new synthetic fiber cloth, PAN. Indian Forest Bull. Entomology, vol. 237, (n. ser.) pp. 1-3.

ROONWAL, M. L., and CHHOTANI, O. B.

1961. The more important wood-destroy-

ing termites of India. Proc. of Symposium on Timber and Allied Products, New Delhi, May 1959, pp. 89-96. Dec.

1962. A new species and a new subspecies of the termite *Speculitermes* (Termitidae, Amitermitinae) from India. Zoolog. Anzeig., vol. 168, Heft 1-4, pp. 57-63, 2 pls., 1 table. Jan.-Feb.

1962a. The termite *Macrotermes gilvus malayanus* (Haviland) (Termitidae) in Burma. Proc. Nat. Inst. Sci. India, vol. 27, B. No. 5, 1961, pp. 308-316, 4 figs., 2 pls., 2 tables. Separate March 20, 1962.

1962b. Termite fauna of Assam region, Eastern India. Loc. cit., vol. 28 B, No. 4, 1962, pp. 281-406, map, 25 figs., 26 pls., 14 tables. Aug. 26.

1962c. The mound of the termite *Odontotermes feae* in India. Proc. 2nd All-India Congr. Zool. Varanasi: Oct. 15-21, 1962, Cuttack. (Abstr.), p. 85.

1962d. Indian species of termite genus *Coptotermes* Ind. Counc. Agric. Res. Entom. Monogr. No. 2, 115 pp., 18 pls. Nov. New Delhi.

1962e. A new Neotropical element (*Anoplotermes*) in the Indian termite fauna, with fuller description of *A. shillongensis* from Assam. Rec. Ind. Mus., vol. 58, pts. 3 and 4, pp. 159-168a, 2 figs., (maps), 1 pl., 3 tab.

1963. Termite "*Odontotermes obesus* (Rambur)": royal chamber with four queens and two kings. Journ. Bombay Nat. Hist. Soc., vol. 59, No. 3, pp. 975-976, 2 pls. Dec. March 1963.

1963a. Discovery of termite genus *Procryptotermes* (Isoptera, Kalotermitidae) from Indo-Malayan Region, with a new species from India. Biol. Zentbl., vol. 82, Heft 3, pp. 265-273, 1 fig., 1 pl., 4 tables. May-June.

1964. Systematics of Oriental termites No. 7. A new termite, *Odontotermes mathadi* from India and the imago of *O. meturensis* R. and C. (Isoptera: Termitidae.) Beiträge zur Entomologie, vol. 14, Heft 1/2, pp. 45-52, 1 fig., pl. 1, figs. a-i, 2 tables. Berlin. March.

1964a. Systematics of Oriental termites. No. 8. Two new species of *Speculitermes* from India. Indian Journ. Agric. Sci., vol. 34, No. 2, pp. 120-130, 5 figs., 2 tables. June.

Roonwal, M. L., Chhotani, O. B., and Bose, G.

1962. Some recent zoogeographical findings in Indian termites. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO) Sect. 1, pp. 51-54, 3 figs.

Roonwal, M. L., and Guha-Roy, S.

1965. Growth-changes, variability and interrelationship of dimensional components in mounds of the termite *Odontotermes obesus* in India. Proc. Nat. Inst. Sci. India, vol. 30, B, No. 2, April 26, 1964, pp. 114-129, pl. XIV, 10 text figs., 3 tables. Issued separately Feb. 5, 1965.

Roonwal, M. L., and Maiti, P. K.

1965. First record of termite genus *Postelectrotermes* (Kalotermitidae) from India, with description of a new species. Indian Journ. Ent., vol. 27, pt. III, pp. 255-261, 2 figs., 2 tables. Sept.

Roonwal, M. L., and Sen-Sarma, P. K.

1960. Contributions to the systematics of Oriental termites. Entomological Monographs—No. 1. Indian Counc. Agric. Res. New Delhi, pp. 1-420, 65 pls., 46 text figs.

Roonwal, M. L., and Thakur, M. L.

1963. Two new species of termites (Rhinotermitidae). *Prorhinotermes shiva* and *Schedorhinotermes tiwarii* from the Andaman Islands (Bay of Bengal.) Indian Journ. Agric. Sci., vol. 33, No. 2, pp. 102-117, 8 figs., 2 tables. June.

Roorkee, Central Building Research Institute.

1965. News and Notes. Termite control measures in building construction. Indian Forest., vol. 91, No. 9, pp. 686-687. Sept.

Rose, D. J. W.

1963. Pests of maize and other cultivated crops in the Rhodesias. Fed. Min. Agric. Rhodesia Bull. 2163.

Rose, M., Arces, P. J. D'., and Mazzella, O.

1960. [Histo-chemical researches on the trophozoite adult of *Joenia annectens*, a joeniid flagellate symbiont of the termite *Calotermes flavicollis*.] (In French.) Algeria. École Nat. Agric. Alger. Ann. 2, No. 4, pp. 1-39. Nov.

Ross, G. M.

1962. How we fumigated the schooner Carrie Bernice. Pest Control, vol. 30, No. 4, pp. 60, 62. April.

Roth, L. M., and Willis, E. R.

1960. The biotic associations of cockroaches, Smithsonian Misc. Coll., vol. 141

(whole vol.), Public. 4422. Dec. 2. Termites as commensal hosts of cockroaches, pp. 57, 69, 102, 310-311, 316, 317, 320.

ROZANOV, B. G.

1963. [Termites of tropical Burma.] (In Russian.) Priro da (Moscow), vol. 9, pp. 63-67.

RUDAKOVA, A. K.

1962. [Methods of protection from termites of packing material for wires.] [*In* Termites and their method of control.] (In Russian.) Acad. Sci. of Turkmenia S.S.R., pp. 88-94.

RUDMAN, P.

1959. Causes of natural durability in timber. III. Some conspicuous phenolic components in the heartwood of eucalypts and their relationship to decay resistance. Holzforschung, vol. 13, pp. 112-115.

1960. Anthraquinones of teak (*Tectona grandis* L.f.) Chem. and Ind. 1960, pp. 1356-1357.)

1965. The causes of natural durability in timber. XVII. The causes of decay. Fungi *Contophora olivacea,* and *Coriolus sanguineus* and termite resistance in *Callitris columellaris* F. Muell. XVIII. Further notes on the fungi *Contophora olivacea* Fr.-Karst., and *Lentinus lepideus* Fr. Toxicity of wood extractives. Holzforschung, vol. 19, No. 2, pp. 52-58. April.

RUDMAN, P., and DA COSTA, E. W. B.

1959. Variation in extractive content and decay resistance in the heartwood of *Tectona grandis* L.f. Journ. Inst. Wood Sci. (1959), No. 3, pp. 33-42.

1960. Investigations on the durability of teak Asia-Pacific Forestry Commission. Third Session of the Teak Sub-Commission Document FAO/TSC 60/4.2.

1961. Causes of natural durability in timber. IV. Variation in the role of toxic extractives in the resistance of durable eucalypts to decay. Holzforsch., vol. 15, pp. 10-15.

RUDMAN, P., and GAY, F. J.

1961. The causes of natural durability in timber. Commonwealth Sci. and Industr. Res. Org. Australia. Reprinted from Holzforschung, vol. 15, No. 2, pp. 50-53, 3 tables. May.

1961a. Idem. Loc. cit., vol. 15, No. 4, pp. 117-120. Sept.

1963. Idem. Loc. cit., vol. 17, No. 1, pp. 21-25, 2 figs., 3 tables. Feb.

1964. Idem. Loc. cit., vol. 18, No. 4, pp. 113-116. Aug.

RUDNEV, D. F.

1963. Die Termiten und ihre Bekämpfung in der Ukraine. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.-Pavia, 9-14 Sett. 1961. vol. XI, pp. 127-131. Dec. 14.

RUI, D.

1963. La diffusione delle termiti nella Venezia Euganea e Giulia. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.-Pavia, 9-14 Sett. 1961, vol. XI, pp. 146-152. Dec. 14.

RUPPLI, E., and LÜSCHER, M.

1964. [The elimination of supernumerary replacement reproductive in the termite *Kalotermes flavicollis* Fabr.] (In German.) Rev. Suisse Zool., vol. 71, No. 3, pp. 626-632, 3 figs. Sept.

RUSSO, G.

1963. La collezione delle termiti raccolte dal Prof. Filippo Silvestri durante i suoi viaggi. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.-Pavia, 9-14 Sett. 1961, vol. XI, pp. 210-217, 5 figs. Dec. 14.

1963a. Elenco dei lavori pubblicati sulle termiti dal Prof. Filippo Silvestri. Loc. cit., vol. XI, pp. 217-222. Dec. 14.

ST. GEORGE, R. A., JOHNSTON, H. R., and KOWAL, R. J.

1963. Subterranean termites. Their prevention and control in buildings. U. S. Dept. Agric. Home and Garden Bull. No. 64, pp. 1-30, 22 figs. Aug. Slightly revised.

SAMPAIO, E. J. F.

1960. Contribution to the study of book's entomofauna in Portugal. Centro Estudos do Livro Português, Lisboa, pp. 1-8. (Termites, pp. 2-3.)

1963. [Small colonies of *Reticulitermes lucifugus* (Rossi) in laboratory tests.] (In Italian.) Symposium Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.-Pavia, 9-14, Sett. 1961, vol. XI, pp. 32-41, 6 figs. Dec. 14.

SAMSINAK, K.

1961. [The termitophilous Acarina from China.] (In German.) Ceskoslov. Spolecnost Ent. Casopis, vol. 58, No. 2, pp. 193-207.

SANDS, W. A.

1960. The initiation of fungus comb construction in laboratory colonies *Ancistrotermes guineenis* (Silvestri.) Bull.

Union Internat. Étude Insectes Sociaux, vol. 7, No. 3, pp. 251-259. Sept.

1961. Nest structure and size distribution in the genus *Trinervitermes* (Isoptera, Termitidae, Nasutitermitinae) in West Africa. Loc. cit., vol. 8, No. 2, pp. 177-188, 2 pls., 2 figs., 1 table. June.

1961a. Foraging behaviour and feeding habits in five species of *Trinervitermes* in West Africa. Ent. Expt. et Appl., vol. 4, No. 4, pp. 277-288, 2 figs., 4 tables. Amsterdam.

1962. The evaluation of insecticides as soil and mound poisons against termites in agriculture and forestry in West Africa. Bull. Ent. Res., vol. 53, Pt. 1, pp. 179-192, 2 figs., 4 tables. April.

1962a. Observations on termites destructive to trees and crops. Nigeria. North. Reg. Min. Agric. Samaru Res. Bull. 26, pp. 1-14.

1965. Mound population movements and fluctuations in *Trinervitermes ebenerianus* Sjöstedt. (Isoptera, Termitidae, Nasutitermitinae) Bull. Union Internat. Étude Insectes Sociaux, vol. 12. No. 1, pp. 49-58, 3 figs., 2 tables. March.

1965a. Alate development and colony foundation in five species of *Trinervitermes* (Isoptera, Nasutitermitinae) in Nigeria, West Africa. Loc. cit., vol. 12, No. 2, pp. 117-129, 6 tables. June.

1965b. A revision of the termite subfamily Nasutitermitinae (Isoptera, Termitidae) from the Ethiopian region. Bull. Brit. Mus. (Nat. Hist.) Ent. Suppl. 4, pp. 1-172, 32 maps, 496 figs. Oct.

1965c. A new species of *Mimeutermes* Silvestri and the imago of *Nasutitermes diabolus* (Sjöstedt) from Africa. (Isoptera: Nasutitermitinae.) Proc. Roy. Ent. Soc. London, ser. B, vol. 34, pts. 9-10, pp. 132-136, figs. 1-11. Oct. 22.

1965d. Termite distribution in man-modified habitats in West Africa, with special reference to species segregation in the genus *Trinervitermes* (Isoptera, Termitidae, Nasutitermitinae.) Journ. Anim. Ecology, vol. 34, pp. 557-571, 7 tables. Oct.

Sankaran, T.

1962. Termites in relation to plant protection. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960. (UNESCO), Sect. 6, pp. 233-236, 1 table.

Sarup, A.

1962. Termites and their control in structures. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 213-215.

Satir, P., and Stuart, A. M.

1965. A new apical microtubule-associated organelle in the sternal gland of *Zootermopsis nevadensis* (Hagen), Isoptera. Journ. Cell Biol., vol. 24, No. 2, pp. 277-283, illustr.

1965a. The fine structure of the sternal gland of the termite *Zootermopsis nevadensis.* (Isoptera, demonstration.) Anatom. Rec., vol. 151, No. 3, p. 494.

Saxam, O.

1961. Protecting your home against termites. New York, Book-serv. Public, 1961, pp. 1-63, map.

Scheerpeltz, O.

1963. [Termitophilous Staphylinidae from East India. Contribution to the knowledge of oriental Staphylinidae.] (In German.) Mus. G. Frey Ent. Arb., vol. 1, pp. 136-140.

Scherzinger, B. C.

1962. Subterranean subterfuge. Pest Control, vol. 30, No. 4, p. 66. April.

Schmidt, H.

1961. Die Wirkung von Röntgenstrahlen auf holzzerstörende Insekten. Holzforsch und Holzverwert., vol. 13, No. 1, pp. 8-11. Feb.

1963. [Experience with the subterranean termite *Reticulitermes* as a laboratory animal.] (In German.) Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia 9-14 Sett. 1961, vol. XI, pp. 20-23. Dec. 14.

Schmidt, R. S.

1960. Functions of *Apicotermes* nests. Bull. Union Internat'l. Étude Insectes Sociaux, vol. 7, No. 4, pp. 357-368, 1 fig., 1 table. Dec.

1964. *Apicotermes* nests. Amer. Zool., vol. 4, No. 2, pp. 221-225, illustr. May.

Schmutterer, H.

1961. [Combatting several important pests and diseases in the Sudan by means of seed treatment.] (In German.) Zeitschr. Pflanzenkrankh. und Pflanzenschutz, vol. 68, pp. 479-489.

Schneiderman, H. A., and Gilbert, L. I.

1964. Control of growth and development in insects. Science, vol. 143, No. 3604, pp. 325-333, 1 fig., 6 tables. Jan. 24.

SCHULER. S.
1964. The worst pet in the world. Popular Science Monthly, vol. 184, No. 4, pp. 124-126, 220, 224, illustr. April.

SCHULTZE-DEWITZ, G.
1960. Vergleichende Untersuchungen der natürlichen Frassresistenz einiger fremländlischer Kernholzarten unter Verwendung von *Reticulitermes lucifugus* Rossi als Versuchtstier. Holzforsch. u. Holzverwert, vol. 12, No. 4, pp. 64-68. Aug.
1960a. Form und Intensität des Termitenangriffes [*Reticulitermes lucifugus.*] an Hölzern verschiedener Struktur und Rohdichte. Prüfungen an getreunten Früh-und Spätholz. Holz als Roh-u-Werkst, vol. 18, No. 10, pp. 365-367. Oct. II. Prüfungen mit Hölzern mitvershieldener Jahrringsbreite und vershiedenem Spätholzanteil. Loc. cit., vol. 18, No. 11, pp. 413-415. Nov. No. 12, pp. 445-446. Dec.
1961. Untersuchungen über Unterschiede in der Frassleistung bei *Reticulitermes lucifugus* Rossi und *Reticulitermes flavipes* Kollar. Holzforschu. Holzverwert, vol. 13, No. 2, pp. 29-31. Apr.
1963. [On the dependency of the result of termite tests from the quantity of the test organisms.] (In German.) Symposia Genetica et Biologica Italica Atti IV Congr. U.I.E.I.S.–Pavia, 9-14 Sett. 1961, vol. XI, pp. 24-31, 4 figs. Dec. 14.
1965. Abhängigkeit des Versuchsergebnisses bei der Termitenprüfung von der Prüfdauer. Beiträge zur Ent., Bd. 15, Heft 1/2, pp. 127-134, 3 figs., 1 table.

SCHWAB, R.
1963. South African termites. Pvakt. Schadlingsbekampfer, vol. 15, No. 5, pp. 57-58. May.

SCOTT, H. G.
1961. Keys to common North American domestic termites. Pest Control, vol. 29, No. 9, p. 46, 48, illustr. Sept.

SCOTT, K.
1964. Screwball *Kalotermes* P.C.O. News, vol. 24, No. 1, p. 23. Jan.

SEBALD, M., and PREVOT, A. R.
1962. [Studies on a new species of strict anaerobic bacterium, *Micromonospora acetoformici* n. sp., isolated from the posterior intestine of *Reticulitermes lucifugus* var. *santonnensis.*] (In French.) Ann. Inst. Pasteur, vol. 102, No. 2, pp. 199-214. Feb.

SEIFERT, K.
1962. Die chemische Veränderung der Holzzellwand-Komponenten unter dem Einfluss tierischer und pflanzlicher Schädlinge. Holzforschung, vol. 16, No. 6, pp. 161-168, 7 figs., 5 tables.
1963. [Chemical parallels in the decomposition of the wood substance by organisms.] (In German.) Holz als Roh-und Werkstoff, vol. 21, pp. 85-96, 10 figs., 8 tables.

SEIFERT, K., and BECKER, G.
1965. Der chemische Abbau von Laub-und Nadelholzarten durch verschiedene Termiten. Holzforschung, vol. 19, Heft 4, pp. 105-111, 7 tables. Aug.

SEMEDO, C. M. B.
1961. Alguns insectos da biocenose do ulmeiro em Portugal. Brotéria, vol. 30, (57), Nos. 3-4, pp. 99-148, illustr. (Termites, pp. 101, 105.)

SENSKE, W. M.
1966. How we built our portable termite colony to boost sales. Pest Control, vol. 34, No. 2, p. 24, 2 figs. Feb.

SEN-SARMA, P. K.
1962. Some observations on swarming in nature and colony foundation under laboratory conditions in *Odontotermes assmuthi* (Holmgren) at Dehra Dun. (Isoptera: Termitidae.) Beiträge zur Entomologie, vol. 12, Nos. 3/4, pp. 292-297, 1 fig. June. Berlin.
1963. Studies on the natural resistance of timbers to termites. Indian Forest Bull. (n. s.) No. 220, pp. 1-10, 2 tables, 1 pl.
1963a. Idem. III. Results of accelerated laboratory tests of 9 species of Indian woods against the Mediterranean dry wood termite (yellow necked dry wood termite), *Kalotermes flavicollis* Fabr. Holzforsch. u. Holzverwert., vol. 15, No. 3, pp. 51-56. July.
1963b. Methods of testing termite resistance of materials in European laboratories. Journ. Soc. Indian Foresters, vol. 3, pp. 57-65.
1964. The effects of temperature and relative humidity on the longevity of pseudoworkers of *Kalotermes flavicollis* (Fabr.) (Isoptera) Proc., pt. B., Biol. Sci., vol. 30, Nos. 5 and 6, pp. 300-314, illustr. Dec. 26.

SEN-SARMA, P. K., and CHATTERJEE, P. N.
1965. Colony foundation through substitute

reproductives in *Heterotermes indicola* (Wasmann) under laboratory conditions (Insecta: Isoptera.) Journ. Timber Development Assoc., Assoc., vol. XI, No. 3, pp. 9-11, 1 pl., 1 text fig. July.
1965a. Studies on the natural resistance of timbers to termite attack. 4. Qualitative and quantitative estimation of resistance of sixteen species of Indian woods against *Neotermes bosei* Snyder (Isoptera, Kalotermitidae) based on laboratory tests. Indian Forester, vol. 91, No. 11, pp. 805-813. Nov.

Sen-Sarma, P. K., and Mathur, R. N.
1961. *Trinervitermes biformis* (Wasmann), a mound building termite in South India. (Isoptera: Termitidae: Nasutitermitinae.) Indian Forester, vol. 87, No. 4, p. 252, illustr. Apr.

Sharma, R. C.
1964. Observations on some insect pests of jowar (*Sorghum vulgare*) at Ajmer (Rajasthan.) Madras Bul. Ent. No. 5, pp. 28-30. Mar.

Shell Chemical Co., New York, N. Y.
1962. Shell offers termite tube pix. Pest Control, vol. 30, No. 4, p. 62. April.
1963. Termites can wreck your home. Facts you should know about termites, ACD:63-4, pp. 1-11, illustr. March.

Shibamoto, T.
1962. [A proposal for the counter plan for insect attack to wood.] (In Japanese.) Mokuzai Kogyo, vol. 17, No. 4, pp. 2-4.

Shimizu, K.
1962. Analytical studies on the vitality of colonies of the Formosan termite, *Coptotermes formosanus* Shiraki. I. Analysis of the strength of vitality. Bull. Faculty Agric., Univ. Miyazaki, vol. 8, No. 1, pp. 105-110, 4 figs. Dec.
1963. Studies on the caste differentiation in termites. Japanese Journ. Applied Ent. and Zool., vol. 7, No. 3, pp. 207-213, 1 fig., tables. Sept.

Siddiqi, Z. A., Rajani, V. G., and Singh, O. P.
1959. Simultaneous control of sugarcane termite and shoot borers through soil application of gamma BHC liquid and its boosting effect on crop yield. Indian Journ. Sugarcane Res., vol. 3, pt. 4, pp. 227-232, 2 figs. New Delhi.

Silvestri, F.
1959. Ricordi e itinerari scientifici, Filippo Silvestri (1873-1949.) Napoli Stabiliment Tipografico Guglielmo Genovese, pp. 1-784, 93 figs., 1 map.

Simon, H.
1962. Exploring the world of social insects. The Vanguard Press, Inc., New York, pp. 7-119 illustr.

Smee, L.
1962. Control of the giant cacao termite (*Neotermes* sp.) Papua and New Guinea Agric. Journ., vol. 14, No. 4, pp. 193-194, pls. 1 and 2. Port Moresby.
1963. Insect pests of *Theobroma cacao* in the Territory of Papua and New Guinea: their habits and control. Loc. cit., vol. 16, No. 1, pp. 1-19, 22 figs., 1 map.
1964. Insect pests of *Hevea brasiliensis* in the territory of Papua and New Guinea; their habits and control. Loc. cit., vol. 17, No. 1, p. 27. June.

Smith, B. L.
1965. Pre-treatment important in Midwest, too. Pest Control, vol. 33, No. 6, pp. 40, 43-44, illustr. June.

Smith, D. N.
1964. Controlling termites and preventing losses in British Columbia. Can. Dept. Forestry Publ., pp. 1-11, illustr., cover, 2 figs., 2 tables. Ottawa.

Smith, H. M.
1957. Curious feeding habit of a blind snake, *Leptotyphlops,* Herpetologica, vol. 13, No. 2, p. 102.

Smith, M. V.
1963. Social insects and the caste system. Canadian Audubon, vol. 25, No. 1, pp. 7-11, illustr.

Smith, R. F.
1965. The bibliography of Edward Oliver Essig and insects named by him. Pan-Pacific Entomologist, vol. 41, No. 4, pp. 235-258.

Smith, V. K.
1961. What we still need to know about termites. Pest Control, vol. 29, No. 4, p. 60. April.

Smith, V. K., and Johnston, H. R.
1962. Eastern subterranean termite [*Reticulitermes flavipes.*] U.S. Forest Service Forest Pest Leaflet 68, pp. 1-7, 4 figs. April.

Smythe, R. V., Allen, T. C., and Coppel, H. C.
1965. Response of the eastern subterranean termite to an attractive extract from *Lenzites trabea*—invaded wood. Journ. Econ. Ent. vol. 58, No. 3, pp. 420-423, 1 fig., 5 tables. June.

SMYTHE, R. V., and COPPEL, H. C.
1964. Preliminary studies on ant-termite relationships in Wisconsin. Ent. Soc. Amer., Proc. No. Cent. Br., vol. 19, 1964, pp. 133-135.
1965. The susceptibility of *Reticulitermes flavipes* (Kollar) and other termite species to an experimental preparation of *Bacillus thuringiensis* Berliner. Journ. Invertebrate Pathology, vol. 7, No. 4, pp. 423-426, 3 tables. Dec.

SNODGRASS, R. E.
1961. Animal societies from slime molds to man. Ann. Rept. Smithsonian Inst. 1960, pp. 425-445.

SNYDER, T. E.
1961. Supplement to annotated, subject-heading bibliography of termites 1955-1960. Smithsonian Misc. Coll., vol. 143, No. 3. (Publication 4463.) pp. 1-137. Dec. 29.
1962. Abstracts. Termite research around the world. Pest Control, vol. 30, No. 2, pp. 48, 50, photo. author. Feb.
1962a. Review. Termites; their recognition and control. W. V. Harris 1961, Longmans, London, pp. 1-187, illustr. Bull. Ent. Soc. Amer., vol. 8, No. 1, p. 50. March.
1963a. Review. The insect factor in wood decay. Hickin, N. E. Hutchison and Co., London and New York, 1963, pp. 1-336, 263 figs., 2 col. pls. Proc. Ent. Soc. Wash., vol. 65, No. 1, p. 13. (March) April.
1963b. The foundation of new termite colonies by supplementary reproductives of species of *Reticulitermes*. Symposia Genetica et Biologica Italica, vol. 11, pp. 175-179. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14 Sept. 1961. Dec. 14.
1965. Our native termites. General Appendix Annual Report Smithsonian Institution 1964, pp. 497-506, 1 fig. Dec. 30.
1966. Termite stowaways intercepted 1962 to 1966. P.C.O. News, vol. 26, No. 4, p. 73. April.
1966a. Review. The termites of the United States. A handbook. F. M. Weesner 1965, Nat. Pest Control Assoc. Elizabeth, New Jersey, pp. 1-71. Bull. Ent. Soc. Amer., vol. 12, No. 2, p. 231. June.

SNYDER, T. E., and FRANCIA, F. C.
1962. A summary of Philippine termites with supplementary biological notes. Philippine Journ. Sci., vol. 89, No. 1, Mar. 1960, pp. 63-77, Feb. 20, 1962.

GIORDANI-SOIKA, A.
1963. [Termites in Venice.] (In Italian.) Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia Sett. 1961, vol. XI, pp. 42-46, 1 table. Dec. 14.

SOLIMAN, A. A.
1964. Topical application of DDT and BHC for determination of their toxicity level to *Hodotermes ochraceus* Burm. in Egypt. Isoptera. Bull. Soc. Ent. Egypte, vol. 47, 56 Ann., pp. 305-308, 2 tables.

SONTI, V. R.
1962. Design and application of portable pressure vacuum plants for termite-proof timber, thatch and bamboo construction. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 203-204.

SPAETH, V. A.
1964. Three new species of termites from Israel. (Termitidae, Amitermitinae) Israel Journ. Zool., vol. 13, No. 1, pp. 27-33, illustr. April.

SPEAR, P. J.
1962. New product development for and by the pest control industry. Proc. 48th Mid-Year Meeting Chemical Specialties Manufacturers Assoc., Inc., 50 E. 41 St., New York 17, N. Y., reprint pp. 1-3.
1966. Legal value of inspection reports and changes in FHA standards at Purdue. Pest Control, vol. 34, No. 3, p. 80. March.

SPENCER, G. J.
1963. Termites in the Queen Charlotte Islands. Ent. Soc. Brit. Columbia, vol. 60, p. 18. Dec. 1.

SPRINGHETTI, A.
1963. Obituary. Jucci, Carlo (1897-1962). Bull. Union Internat. Étude Insectes Sociaux, vol. 10, No. 4, pp. 391-393, 1 fig. photo. Dec.
1963a. Anomalie morfologiche nel *Kalotermes flavicollis* Fabr. Boll. Soc. Entom. Italiana, vol. XCIII, No. 9-10, pp. 155-159, 5 figs. Dec. 20.
1963b. Contributi allo studio della termiti in Italia per l'impostazione razionale della lotta antitermitica. IX. Seconda esplorazione in Sicilia. Boll. Ist. Pat. Libro, pp. 105-122, 1 map, 1 table. Jan. Dec.

SPRINGHETTI, A., and GELMETTI, L.
1960. Sull' apparato genitale maschile di *Reticulitermes*. Bull. Union Internat. Étude Insectes Sociaux, vol. 7, No. 4, pp. 377-382, 5 figs. Dec.

SPRINGHETTI. A., and ODDONE, P.
1962. Sulla formazione di oociti nel testicolo di un soldato di *Kalotermes flavicollis* Fabr. Symposia Genetica et Biologica Italica, vol. IX, pp. 1-9, 6 figs., reprint.
1963. Sugli organi genitali maschili delle Rhinotermitidae (Isoptera.) Bull. Union Internat. Étude Insectes Sociaux, vol. 10, No. 2, pp. 143-152, 6 figs. June.
1963a. Funzionalità dell apparato genitale maschile in caste diverse di alcune termiti primitive. Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14 Sett. 1961, vol. XI, pp. 311-334, 26 figs. Dec. 14.
1964. Sull'apparato genitale maschile delle Kalotermitidae e delle Termopsidae (Isoptera.) Symposia Genetica et Biologica Italica, vol. 13, pp. 146-156, 15 figs.

SRIVASTAVA, A. S., GUPTA, B. P., and AWASTHI, G. P.
1962. Termites and their control. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 6, pp. 241-242, 1 table.

STEIN, W. J., and HAYES, W. J.
1964. Health survey of pest control operators. Industrial Medicine and Surgery, vol. 33, No. 8, pp. 549-555. August.

STEINBERG, D. M.
1962. [Termites of U.S.S.R. and the level of their study. *In* termites and their method of control. First all union conference for the study of the termites of U.S.S.R. and elaboration of the control measures. Ashkhabad Oct. 17-20, 1960.] (In Russian.) Institute of Zoology and Parasitology, Acad. of Sci. of Turkmenia S.S.R., pp. 11-16.
1962a. [Physiology of the development of the polymorphism in termites.] Loc. cit., pp. 37-48.

STEWART, D.
1962. Precision fumigation for drywood termites with Vikane. Pest Control, vol. 30, No. 2, pp. 24, 26, 28, 2 figs., 5 tables. Feb.

STEWART, D. and MEIKLE, R. W.
1964. Post-fumigation aeration of Vikane [in buildings, termite infestation.] Down Earth, vol. 20, No. 2, pp. 2, 14, 15, 16, illustr.

STIRN, J.
1963. [Notes on the zoogeography and ecology of the termites in Yugoslavia.] (In Yugoslavic.) Dissertations. Acad. Scientiarum et Artium Slovenica Classis IV: Historia Naturalis et Medicina VII, pp. 239-269, 1 map, 13 figs., 5 tables.

STUART, A. M.
1962. Origin of the trail in the termites *Nasutitermes corniger* (Motschulsky) and *Zootermopsis nevadensis* (Hagen), Isoptera. Physiol. Zool., Chicago, Ill., vol. 36, No. 1, pp. 69-84, 2 figs., 6 tables. Jan.
1963a. Studies on the communication of alarm in the termite *Zootermopsis nevadensis* (Hagen), Isoptera. Loc. cit., vol. 36, No. 1, pp. 85-96, 5 figs. Jan.
1964. The structure and function of the sternal gland in *Zootermopsis nevadensis* (Isoptera) Proc. Zool. Soc. London, vol. 143, pt. 1, pp. 43-52, 5 figs. July.

SUDD, J.
1965. How insects work in groups. General Appendix, Ann. Rep. Smithsonian Institution 1964, pp. 489-496, 2 pls. Dec. 30.

SUNDIN, B.
1963. Fumigation reporting regulations. P.C.O. News, vol. 23, No. 10, pp. 12-13. Oct.

SUNDLOF, W. A.
1964. Modern building codes accept fire retardant treated wood. Wood Preserving News, vol. 42, No. 9, pp. 11-15, 17-18, illustr. Sept.

SWAN, L. A.
1964. Beneficial insects. Harper and Row. New York, pp. i-xvii, 1-429, illustr. (Termites, pp. 4, 97, 240.)

SWEENEY, R. C. H.
1961. Insect pests of stored products in Nyasaland, Umtale, S. Rhodesia, pp. 1-49, illustr.

SWEETMAN, H. L.
1965. Recognition of structural pests and their damage, 371 pp., illustr. Wm. C. Brown Co., Dubuque, Iowa.

SWETT, T. YU, see YU, C. W.

SZENT-IVANY, J. J. H.
1961. Insect pests of *Theobroma cacao* in the Territory of Papua and New Guinea Agric. Journ. vol. 13, No. 4, pp. 127-147, illustr. Mar.

1964. Further records of insect pests of *Theobroma cacao* in the Territory of Papua and New Guinea. Loc. cit., vol. 16, No. 1 pp. 37-43. June.

TAMBLYN, N. E.

1960. The importance of preservative treatments in hardwood utilization. Australian Timber Journ., vol. 26, No. 5, pp. 27 et. seq.

1962. Preservation of hardwood building timbers with special reference to tropical countries. United Nations. Conf. Appli. Sci. and Technol. Benefit Less Developed Areas. [Working Papers Agric.], vol. 7, No. 316, pp. 1-4. Oct. 18, 1962. (E/CONF. 39/C/316.)

1962a. Some current trends and problems in wood preservation in Australia. Australian Timber Journ., vol. 28, No. 11, pp. 79-89.

TANG, C., and LI, S.

1960. [Notes on the types of the reproductive castes of subterranean termites *Coptotermes formosanus* Shiraki and *Reticulitermes flaviceps* Oshima (Isoptera, Rhinotermitidae).] (In Chinese.) Acta Ent. Sinica, vol. 10, Nos. 1/3, pp. 302-306.

TEOTIA, T. P. S., GUPA, K. M., RAJANI, V. G., and SAGAR, G.

1963. Effective control of termites and shoot borers through soil application of heptachlor in sugarcane crop. Indian Journ. Sugarcane Res., vol. 7, pt. 4, pp. 203-211. New Delhi.

TEOTIA, T. P. S., RAJANI, V. G., and SAGAR, G.

1963. Additional findings on the use of gamma BHC against termites and shoot borers in sugarcane crop in Uttar Pradesh. Indian Journ. Sugarcane Res., vol. 8, pt. 1, pp. 33-38.

TESSIER, F.

1959. Termitières fossiles dans la latérite de Dakar (Sénégal) Remarques sur les structures latéritiques. Univ. Dakar Ann. Faculté Sci. Année 1959, vol. 4, pp. 91-132, 12 figs., 5 pls.

1959a. [The laterite of the Manuel cape at Dakar and its fossil termitaria.] (In French.) C. R. Acad. Sci. Paris, vol. 248, pp. 3320-3322.

TEWARI, M. C.

1961. A note on the chemical analysis of Ascu treated timber after more than twenty years of service. Journ. Timber Dryers' and Preservers' Assoc. India, vol. 7, No. 3, pp. 10-13, 2 tables. July.

THEDEN, G., and BECKER, G.

1961. 3.10 Prüfung auf Verhalten gegen Organismen. Nitsche/Wolf Kunststoffe, vol. 2, pp. 376-409, 19 figs., 4 tables.

THOMAS, A. S.

1962. Ant hills and termite mounds in pastures. Journ. Brit. Grassland Soc., vol. 17, No. 2, pp. 103-108, illustr.

THOMAS, E. D.

1964. *Cryptotermes brevis*: Control by methyl bromide. *In*: Symposium on entomological problems, 1961. S. Africa Dep. Agric. Tech. Serv., Tech. Commun. 12, pp. 56-61, 1964.

THOMAS, R. T. S.

1962. Enkele aantekeningen over het voorkomen van *Coptotermes hyaloapex* Holmgr. (Rhinotermitidae) in Nederlands Nieuw Guinea. Ent. Ber., vol. 22, No. 3, Mar. 1, pp. 57-58, illustr.

THURMAN, E. B.

1963. Obituary. Snodgrass, Robert E. (1875-1962.) Proc. Ent. Soc. Wash., vol. 64, No. 4, pp. 213-216, photo. Dec. 1962.

TIETZ, H. M.

1963. Illustrated keys to the families of North American insects. Burgess Publishing Co., Minneapolis, pp. 1-206. (Isoptera p. 116.)

TOMOV, A.

1962. [Chlorinated hydrocarbon insecticides from biological and toxicological point of view.] Priorda (Sofia), vol. 3, pp. 67-70.

TOWNSEND, R. F.

1964. A western utility's experience with treated wood, including termite attack. Proc. Amer. Wood Preserv. Assoc., vol. 60, pp. 13-19.

TRUCKENBRODT, W.

1964. Zytologische und entwicklungs physiologische Untersuchungen am besamten und am parthenogenetischen Ei von *Kalotermes flavicollis* Fabr. Reifung, Furchungsablauf und Bildung der Keimanlage. Zool. Jahrb., Abt. f. Anat. u. Ontog. Tiere, vol. 81, H. 3, pp. 359-434, illustr. June 30.

TRUMAN, L. C.

1962. Subterranean termites. Lesson No. 13. Purdue Univ. Correspondence Course in Pest Control Technology. Pest Control, vol. 30, No. 1, pp. 27-34, figs. 13-A-13H. Jan.

1962a. Non-subterranean termites and other wood-destroying organisms. Lesson No. 14. Loc. cit., vol. 30, No. 2, pp. 39-46, figs. 14-A-14N. Feb.

Tsai, Pang-Hwa, and Chen, Ning-Sheng.
1963. [New termites from South China.] (In Chinese.) Acta Ent. Sinica, vol. 12, No. 2, pp. 167-198, 30 figs.
1964. [Problems on the classification and fauna of termites in China.] (In Chinese.), Loc. cit., vol. 13, No. 1, pp. 25-37. Jan.

Tsai, Pang-Hwa, Chen, Ning-Sheng, Chen, An-Kuo, and Chen, Chih-Hwei.
1965. [Architecture and development of the termitarium of *Odontotermes* (*O.*) *formosanus* Shiraki.] (In Chinese.) Acta Ent. Sinica, vol. 14, No. 1, pp. 53-70, 6 figs., Jan. Peking.
1965a. [The activity of *Odontotermes* (*O.*) *formosanus* Shiraki on the ground of Yangtse-dike and its relation to the nest.] (In Chinese.) Loc. cit., vol. 14, No. 2, pp. 128-139, 4 figs. March.

Tsvetkova, V. P.
1950. [Fighting termites by building construction.] (In Russian.) Priroda No. 1, pp. 95-96, 3 figs. Jan. 30.
1963. [*Reticulitermes lucifugus* Rossi in the south of Ukraine.] (In Russian.) Akad. Nauk Turkmensk. S.S.R.: Ashkhabad. 28-36, 1962; Referat. Zhur., Biol., 1963, No. 8E 228.

Turner, N.
1961. Termites in buildings. Conn. Agric. Expt. Sta. Circ. 218, pp. 1-12. April.

Uichanco, L. B.
1961. Probable relation to altitude of the mound-building habit of *Macrotermes* (Isoptera: Termitidae) Phil. Journ. Sci., vol. 90, No. 2, pp. 215-218. June.

UNESCO.
1962. Humid tropics research. Proc. Intern. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO) 1962, pp. 1-254, frontis., 50 figs., 16 pls. Oct. 17.

Urquhart, F. A.
1965. Introducing the insect. Frederick Warne and Co. Ltd., London, pp. I-X, 1-258, figs. 153. (Termites, pp. 69-72, fig. 32.)

U.S. Dept. Agriculture, Agricultural Research Service.
1964. Safe disposal of empty pesticide containers and surplus pesticides, pp. 1-6, illustr. Aug.

U.S. Dept. Agriculture, Forest Service.
1961. Soil treatment, an aid in termite control. Leaflet 324, pp. 1-8, folder, slightly revised. Dec.

U.S. Dept. Agriculture, Plant Pest Control Div.
1962. Man, Animal, Household insects. Coop. Econ. Insect Rep., vol 12, No. 4, p. 47. Jan. 26.
Ibid. Miscel. Ins., pp. 53, 54.
1962a. Household and Structural insects. Loc. cit., vol. 12, No. 12, p. 261. Mar. 23.
1962b. Fruit insects. Loc. cit., vol. 12, No. 39, p. 1053; Household and Structural insects, p. 1063. Sept. 28.
1962c. Household and Structural insects. Loc. cit., vol. 12, No. 45, p. 1172. Nov. 9.
1962d. Idem. Loc. cit., vol. 12, No. 48, p. 1217. Nov. 30.
1962e. Idem. Loc. cit., vol. 12, No. 50, p. 1252. Dec. 14.
1962f. Idem. Loc. cit., vol. 12, No. 50, p. 1252. Dec. 14.
1963. Summary insect conditions Republic of the Sudan. Loc. cit., vol. 13, No. 5, p. 79, p. 80. Feb. 1.
1963a. Summary insect conditions Ethiopia. Loc. cit., vol. 13, No. 5, p. 83. Feb. 1.
1963b. Household and Structural insects. Loc. cit., vol. 13, No. 8, p. 119. Feb. 22.
1963c. Idem. Loc. cit., vol. 13, No. 13, p. 310. Mar. 29.
1963d. Idem. Miscel. insects. Loc. cit., vol. 13, No. 20, p. 533. May 17.
1963e. Idem. Hawaiian insect notes. Loc. cit., vol. 13, No. 25, p. 698. June 21.
1963f. Household and Structural insects. Loc. cit., vol. 13, No. 37, p. 1087. Sept. 13.
1963g. Idem. Loc. cit., vol. 13, No. 38, p. 1120. Sept. 20.
1963h. Fruit insects. Loc. cit., vol. 13, No. 39, p. 1142. Sept. 27.
1963i. Idem. Loc. cit., vol. 13, No. 40, p. 1178. Oct. 4.
1963k. Household and Structural insects. Loc. cit., vol. 13, No. 41, p. 1219. Oct. 11.
1963l. Cereal and Forage insects. Loc. cit., vol. 13, No. 43, p. 1264. Oct. 25.
1963m. Miscel. insects. Loc. cit., vol. 13, No. 48, p. 1368. Nov. 29.
1963n. Hawaiian insect notes. Loc. cit., vol. 13, No. 51, p. 1416. Dec. 20.
1964. Idem. Loc. cit., vol. 14, No. 10, p. 150. Mar. 6.

1964a. Idem. Loc. cit., vol. 14, No. 12, p 222. Mar. 20.
1964b. Miscel. insects. Loc. cit., vol. 14, No. 15, p. 319. Apr. 10.
1964c. Household and Structural insects. Loc. cit., vol. 14, No. 16, p. 340. Apr. 17.
1964d. Ornamental insects. Loc. cit., vol. 14, No. 16, p. 360. Apr. 17.
1964e. Detection. Loc. cit., vol. 14, No. 17, p. 363. Apr. 24.
1964f. Household and Structural insects. Loc. cit., vol. 14, No. 33, p. 953. Aug. 14.
1964g. Forest, Ornamental and Shade Tree insects. Loc. cit., vol. 14, No. 41, p. 1131. Oct. 9.
1964h. Fruit insects. Loc. cit., vol. 14, No. 43, p. 1164. Oct. 23.
1964i. Cereal and Forage insects. Loc. cit., vol. 14, No. 44, p. 1186. Oct. 30.
1964j. Truck Crop insects. Loc. cit., vol. 14, No. 44, p. 1190. Oct. 30.
1964k. Forest Ornamental and Shade Tree insects. Loc. cit., vol. 14, No. 44, p. 1192. Oct. 30.
1964l. Household and Structural insects. Loc. cit., vol. 14, No. 47, p. 1242. Nov. 20.
1965. Fruit insects. Loc. cit., vol. 15, No. 13, p. 241. Mar. 26.
1965a. Household and Structural insects. Highlights: Loc. cit., vol. 15, No. 15, pp. 326-327. April 9.
1965b. Fruit insects. Loc. cit., vol. 15, No. 16, p. 340. April 16.
1965c. Household and Structural insects. Loc. cit., vol. 15, No. 16, p. 347. April 16.
1965d. Idem. Loc. cit., vol. 15, No. 17, p. 388. April 23.
1965e. Cereal and Forage insects. Loc. cit., vol. 15, No. 18, p. 417. April 30.
1965f. Household and Structural insects. Loc. cit., vol. 15, No. 19, p. 456. May 7.
1965g. Idem. Loc. cit., vol. 15, No. 20, p. 490. May 14.
1965h. Idem. Loc. cit., vol. 15, No. 21, p. 519. May 21.
1965i. Idem. Loc. cit., vol. 15, No. 22, p. 555. May 28.
1965j. Idem. Loc. cit., vol. 15, No. 23, p. 586. June 4.
1965k. Idem. Loc. cit., vol. 15, No. 25, p. 657. June 18.
1965l. Forest Ornamental and Shade Tree insects. Loc. cit., vol. 15, No. 25, p. 655. June 18.
1965m. Household and Structural insects. Loc. cit., vol. 15, No. 27, p. 732. July 2.
1965n. Cereal and Forage insects. Loc. cit., vol. 15, No. 28, p. 748, July 9.
1965o. Hawaiian insect notes. Loc. cit., vol. 15, No. 28, p. 773. July 9.
1965p. Cereal and Forage insects. Loc. cit., vol. 15, No. 32, p. 884. Aug. 6.
1965q. Hawaiian insect notes. Loc. cit., vol. 15, No. 32, p. 901. Aug. 6.
1965r. Household and Structural insects. Loc. cit., vol. 15, No. 32, pp. 907-908. Aug. 6.
1965s. Idem. Loc. cit., vol. 15, No. 33, p. 944. Aug. 13.
1965t. Idem. Loc. cit., vol. 15, No. 34, p. 981. Aug. 20.
1965u. Truck Crop insects. Loc. cit., vol. 15, No. 35, p. 1002. Aug. 27.
1965v. Household and Structural insects. Loc. cit., vol. 15, No. 35, p. 1015 Aug. 27.
1965w. Idem. Loc. cit., vol. 15, No. 36, p. 1050. Sept. 3.
1965x. Forest, Ornamental and Shade Tree insects. Loc. cit., vol. 15, No. 37, p. 1078. Sept. 10.
1965y. Household and Structural insects. Loc. cit., vol. 15, No. 37, p. 1080. Sept. 10.
1965z. Idem. Loc. cit., vol. 15, No. 37, p. 1081. Sept. 10.
1965a[1]. Stored-Product insects. Loc. cit., vol. 15, No. 37, p. 1081. Sept. 10.
1965b[1]. Household and Structural insects. Loc. cit., vol. 15, No. 38, p. 1105. Sept. 17.
1965c[1]. Forest, Ornamental and Shade Tree insects. Loc. cit., vol. 15, No. 39, p. 1125. Sept. 24.
1965d[1]. Cereal and Forage insects. Loc. cit., vol. 15, No. 42, p. 1184. Oct. 15.
1965e[1]. Interceptions. Loc. cit., vol. 15, No. 44, p. 1235. Oct. 29.
1965f[1]. Household and Structural insects. Loc. cit., vol. 15, No. 45, p. 1248. Nov. 5.
1965g[1]. Cereal and Forage insects. Loc. cit., vol. 15, No. 46, p. 1264. Nov. 12.
1965h[1]. Fruit insects. Loc. cit., vol. 15, No. 46, p. 1265. Nov. 12.
1965i[1]. Household and Structural insects. Loc. cit., vol. 15, No. 53, p. 1346. Dec. 31.
1965j[1]. Idem. Loc. cit., vol. 15, No. 53, p. 1346. Dec. 31.

1966. Idem. Loc. cit., vol. 16, No. 2, p. 18. Jan. 21.
1966a. Idem. Loc. cit., vol. 16, No. 4, p. 53. Jan. 28.
1966b. Idem. Loc. cit., vol. 16, No. 5, p. 68. Feb. 4.
1966c. Summary Insect Conditions in Hawaii, 1965. Loc. cit., vol. 16, No. 5, p. 73. Feb. 4.
1966d. Small grain insects, highlights. Loc. cit., vol. 16, No. 6, p. 96. Feb. 11.
1966e. Insect Detection. Loc. cit., vol. 16, No. 7, p. 101. Feb. 18.
1966f. Household and Structural insects. Loc. cit., vol. 16, No. 8, p. 122. Feb. 25.
1966g. Idem. Loc. cit., vol. 16, No. 10, p. 174. Mar. 11.
1966h. Idem. Loc. cit., vol. 16, No. 11, p. 202. Mar. 18.
1966i. Ornamentals. Loc. cit., vol. 16, No. 12, p. 222. Mar. 25.
1966j. Households and Structures. Loc. cit., vol. 16, No. 12, p. 223. Mar. 25.
1966k. Forest and Shade Trees. Loc. cit., vol. 16, No. 13, p. 246. Apr. 1
1966l. Households and Structures. Loc. cit., vol. 16, No. 13, pp. 246-247. Apr. 1.
1966m. Hawaii Insect Report. Loc. cit., vol. 16, No. 14, p. 286. April 8.
1966n. Households and Structures. Loc. cit., vol. 16, No. 15, pp. 311, 325-326. April 15.
1966o. Idem. Loc. cit., vol. 16, No. 16, p. 342. April 22.
1966p. Idem. Loc. cit., vol. 16, No. 18, p. 394. May 6.
1966q. Idem. Loc. cit., vol. 16, No. 19, p. 417. May 13.

U.S. Dept. Agriculture, Plant Quarantine Div.
1962. List of intercepted plant pests, 1962, pp. 1-88. April.

U.S. Public Health Service.
1965. Directory of poison control centers. U.S. Dept. Health, Education, and Welfare, Divis. of Accident Prevention, National Clearinghouse for Poison Control Centers. Public Health Service Publ. 1278, pp. 1-40. Feb. Washington, D.C.

Uthaisilp, C.
1962. [Life history of termites.] (In Siamese) Kesikorn, vol. 35, No. 5, pp. 417-422. Sept.
1962a. [Protection and eradication of ground termites.] (In Siamese.) Loc. cit., vol. 35, No. 6, pp. 493-502. Nov.

Uttangi, J .C., and Desai, R. N.
1962. On some gregarines from the non-xylophagous termite. *Speculitermes cyclops sinhalensis* from Dharwar, India. Journ. Animal Morphol. and Physiol., vol. 9, No. 2, pp. 97-109, illustr. Dec.
1963. *Metaclevelandella termitis,* a new genus and species of heterotrichous ciliate (family Clevelandellidae) found in the Indian termite *Capritermes incola* Wasm. Parasitology, vol. 53, Nos. 1/2, pp. 39-43. May.

Uttangi, J. C., and Joseph, K. J.
1962. Flagellate symbionts (Protozoa) of termites. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 5, pp. 155-161.

Van Ark, H.
1961. Harvester termite [*Hodotermes mossambicus*] control in the Karoo. Farming South Africa, vol. 37, No. 7, pp. 46-48. Oct.
1964. 'n oorsig van die insekte probleem van die Karoo. South Africa Dept. Agric. Tech. Serv. Sympos on Ent. Problems, July 1961. Tech. Commun. No. 12, 1964, pp. 121-124.

Vercammen-Grandjean, P. H.
1965. *Tenotrombicula minteri,* n.g., n. sp. an interesting commensal of African termites (Trombiculidae, Acarina.) Acarologia, vol. 71 (Sup.), pp. 259-265. Apr.

Verron, H.
1963. Rôle des stimuli chimiques dans l'attraction sociale chez *Calotermes flavicollis* (Fabr.) Bull. Union Internatl. Étude Insectes Sociaux, vol. 10, Nos. 2, 3, 4, pp. 167-335, 90 figs., 91 tables. June-December.

Verron, H., and Barbier, M.
1962. L'hexène-3 ol-1, substance attractive des termites, *Calotermes flavicollis* et *Microcerotermes edentatus.* C. R. Acad. Sci., Paris, vol. 254, pp. 4089-4091. June 4.

Vieco, H. A.
1962. Principal pests of cotton in Columbia. Inst. Fomento Algodonero, Dept. Exper. Bol. Tech. No. 2, Bogotá, pp. 1-64.

Vishnoi, H. S.
1962. Musculature of a common Indian termite *Odontotermes obesus* (Rambur) (Isoptera, Termitidae.) Pt. 1. Cephalic musculature. Bull. Ent., No. 3, pp. 13-30, 5 figs. March. Madras.

1962a. A review of the termite fauna from Delhi and its environs. Proc. Internat. Symposium on Termites in the Humid Tropics, New Delhi, Oct. 4-12, 1960 (UNESCO), Sect. 3, pp. 107-109.

Vité, J. P.
1952. Die holzzerstörenden Insekten Mitteleuropas. Textband, pp. 1-155, illustr. "Musterschmidt." Wissenschaftlicher Verlag. Gottingen. (Termites, pp. 127-128.)

Wagner, R. E., and Ebeling, W.
1964. Improvements in equipment for dusting of voids in walls etc. P.C.O. News, vol. 24, No. 6, pp. 24-25. June.

Ward, J. C.
1962. Public acceptance of pesticides depends on safe use. Pest Control, vol. 30, No. 1, pp. 9, 11-12, 14-15, photo. author. Jan.

Watanabe, T., and Casida, J. E.
1963. Response of *Reticulitermes flavipes* to fractions from fungus-infected wood and synthetic chemicals. Journ. Econ. Ent., vol. 56, No. 3, pp. 300-307, 1 fig., 1 table. June.

Watson, J. P.
1962. The soil below a termite mound. Journ. Soil Sci., vol. 13, No. 1, pp. 46-51. Mar.

Webb, G. C.
1961. Keys to the genera of the African termites. Ibadan. Nigeria Ibadan Univ. Press, pp. 1-34, 50 figs. Nigeria. Sept.

Webb, J.
1962. TOs, researchers demonstrate termite control to public in Delaware project. Pest Control, vol. 30, No. 10, pp. 84, 86, 88, illustr., Oct.

Weber, N. A.
1964. Termite prey of some African ants. Entomological News, vol. 75, No. 8, pp. 197-204. Oct.

Weesner, F. M.
1965. The termites of the United States. A handbook. National Pest Control Assoc., pp. 1-71, 21 figs., 3 tables. Dec.
1966. The termites of the western United States. P.C.O. News, vol. 26, No. 1, pp. 19-20, 53-56. Jan.

Weidner, H.
1961. Beiträge zur Kenntnis der Termiten Angolas, hauptsächlich auf Grund der Sammlungen und Beobachtungen von A-de Barros Machado. (2. Beitrag), pp. 15-76, 60 figs. Lisbon. Comp. Diamantes de Angola (Diamang) Serviços Culturais Publ. Cult. No. 54, Mus. Dundo, Subsíd. Estud. Biol. Lunda. Separate Lisboa. July 14.
1962. Die *Macrotermes*-Arten Burmas. Anzeig für Schädlingskunde, vol. 35, No. 9, pp. 129-133, 10 figs., 1 table, map. Sept.
1962a. [The significance of packaging in the protection of products against insects.] (In German.) "Susswaren", vol. 6, No. 18, pp. 1074-1087, 7 figs., 3 tables.
1962b. Auf landwirtschaftlichen Versuchsfeldern in Sudan schädliche Termiten und die Beschreibung einer neuen *Pseudacanthotermes*-Art (Isoptera.) Zeitschr. Angew. Entom., vol. 51, No. 1, pp. 86-93, 6 figs. Dec.
1963. Ergebnisse der zoologischen Nubien-Expedition 1962. Ann. Naturhistor. Mus. Wien, vol. 66, pp. 409-411. June.

Weiser, J., and Hrdý, I.
1962. Pyemotes-Mites as parasites of termites. Zeitschr. Angew. Entom., vol. 51, No. 1, pp. 94-97, 2 figs. Dec.

Weiss, H. B., and Carruthers, R. H.
1937. Insect enemies of books. Bull. New York Public Library, reprint pp. 1-63, 4 pls. Sept.-Dec. 1936. Bibliography.

Welch, H. E.
1965. Entomophilic nematodes. Ann. Rev. Ent., vol. 10, pp. 275-302.

Wendt, H.
1965. The sex life of the animals. The love factory of the termites. Chap. 4, pp. 185-192, illustr., translated from German, Simon and Schuster, New York. Sept.

West, I., and Kleinman, G.
1964. Pesticide safety record. P.C.O. News, vol. 24, No. 7, p. 21. July.

Wheatley, G. A., and Hardman, J. A.
1960. The bioassay of residues of insecticides in soil. Ann. Appl. Biol., vol. 48, pp. 423-427.

Wheeler, G. C., and Wheeler, J.
1963. The termites of North Dakota. Journ. Kans. Ent. Soc., vol. 36, No. 3, pp. 190-193, illustr., distribution map. July 24.

Whitney, W. K.
1961. Fumigation hazards as related to the physical, chemical and biological properties of fumigants. Pest Control, vol. 29, No. 7, pp. 16-21, 1 table. July.

Wiese, J. H.
1964. Some biological studies on the inactivation of insecticides by various soil

types. So. African Journ. Agric. Sci., vol. 7, No. 4, pp. 823-835, illus.

WIGGLESWORTH, V. B.

1964. The life of insects. The Weidenfeld and Nicolson Natural History, London, pp. 1-360, 164 figs., 36 pls. (Termites, pp. 71, 86, 87, 100, 117, 120, 135, 156, 239-240, 244, 245, 247, 309, 310; figs. 51, 80, 118, 119, 144, pl. 13.)

WILKINSON, W.

1962. Dispersal of alates and establishment of new colonies in *Cryptotermes havilandi* (Sjöstedt.) (Isoptera, Kalotermitidae.) Bull. Ent. Res., vol. 53, Pt. 2, pp. 265-286, 2 pls., 6 figs. London.

1962a. The principles of termite control in forestry. Nairobi, Govt. Printer, pp. 1-8.

1963. The alate flight and colony foundation of *Cryptotermes havilandi* Sjösted. (Isoptera, Kalotermitidae.) Symposia Genetica et Biologica Italica. Atti IV Congr. U.I.E.I.S.–Pavia, 9-14 Sett. 1961, vol. XI, pp. 269-275, 1 fig. Dec. 14.

1964. The protection of living trees against attack by termites. Journ. East African Agric. and Forestry, vol. 29, No. 4, pp. 337-339. Apr.

1965. Termites in forest plantations. Proc. XII Internat. Congr. Ent. London 1964, Sect. 10: Forest Entomology, pp. 669-670.

WILLIAMS, R. M. C.

1962. A correction concerning two East African Termitinae (Isoptera.) Proc. Roy. Ent. Soc. London, ser. B, Taxonomy, vol. 31, pts. 9-10, pp. 127-130, 7 figs. Nov. 20.

1965. Infestation of *Pinus caribaea* by the termite *Coptotermes niger* Snyder. Proc. XII Internat. Congr. Ent. London 1964. Tropical Forest Entomology, pp. 675-676.

1965a. Termite infestation of pines in British Honduras. Minister of Overseas Development, Overseas Research Publications No. 11, pp. 1-31.

WILSON, E. O.

1965. Chemical communication in the social insects. Science, vol. 149, No. 3688, pp. 1064-1071, 5 figs., 1 table. Sept. 3.

WOLCOTT, G. N.

1953. The residual effectiveness of insecticides against soil inhabiting insects. Shell Agric. Bull. ADB: 237 (London Agric. Dept. Bull.) No. 237, pp. 1-5.

WRIGHT, N. L.

1962. Some inside advice to termitemen who offer pretreatment on Veterans Administration financed jobs in North Carolina. Pest Control, vol. 30, No. 6, pp. 48, 50, 52. June.

WYGODZINSKY, P.

1961. A new genus of termitophilous Atelurinae from South Africa (Thysanura: Nicoletiidae.) Journ. Ent. Soc. Southern Africa, vol. 24, No. 1, pp. 104-109, 28 figs. May 31.

WYNIGER, R.

1962. Pests of crops in warm climates and their control. Acta Tropica, Suppl. 7, pp. 1-555, illustr. (Isoptera p. 12, 457-463.)

YENDOL, W. G.

1965. The pathogenesis of *Entomophthora.* Diss. Abs. 28(8), 4881. Purdue Univ. 1964. Feb.

YENDOL, W. G., and PASCHKE, J. D.

1965. Pathology of an *Entomophthora* infection in the eastern subterranean termite *Reticulitermes flavipes* (Kollar). Journ. Invertebrate Pathology, vol. 7, No. 4, pp. 414-422, 6 figs., 2 tables. Dec.

YOKOE, Y.

1964. Cellulase activity in the termite *Leucotermes speratus,* with new evidence in support of a cellulase produced by the termite itself. Tokyo U. Col. Gen. Educ. Sci. Papers, vol. 14, No. 1, pp. 115-120, illustr. June.

YU, C. W., and PING, C. M.

1964. [Studies on the faunal regions of Isoptera in China.] (In Chinese.) Acta Ent. Sinica, vol. 13, No. 1, pp. 10-24, map. Jan.

1964a. [Systematics of Isoptera from China. 1. Description of a new genus *Operculitermes* (Rhinotermitidae, Heterotermitinae), with reference to two new species and three new subspecies.] (In Chinese.) Loc. cit., vol. 13, No. 3, pp. 344-361, illustr. May.

YUNUS, E. A.

1960. Resumé of entomological work. Federation of Malaya. Rep. Seventh Entomol. Conf., 6-15th July 1960, pp. 255-260.

ZIMSEN, E.

1964. The type material of J. C. Fabricius, Munksgaard, Copenhagen, pp. 612-613, termites.

ZONDAG, R., and GILMOUR, J. W.

1963. Forest pathology: Entomology, Gen-

eral. New Zealand Forest Res. Inst. Rept. for Jan. 1–Dec. 31, 1962, publ. 1963, pp. 40-42.

ZUBERI, H. A.

1962. Étude comparative de la structure du cerveau des termites. XI Internatl. Kong. Entm. Wien 17-25 Aug. 1960 Verhandl. Band 1, Sekt. 11, pp. 393-395, pl. XIII, 1960.

1963. [Comparative anatomy of the brain in termites in relation to polymorphism.] (In French.) Bull. Biol. France et Belgique, vol. 97, No. 1, pp. 147-208, illustr.

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